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In This Issue

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Private Ownership Crisis Epitomized in Two Bills

It has been truly observed that the railroads are the first line of defense against state socialism. If they should fall, other industries would inevitably be drawn into the net; and any possibility of truly representative government would, of course, come to an end with the addition of 1,000,000 families—each with its votes—to the permanent public payroll.

Two Major Engagements Now in Progress

Yet neither industry nor the public generally appear to realize that a desperate battle is even now taking place on its "first line of defense". This battle is signalized by two bills actively before Congress. One represents the striving of the forces of private initiative and freedom. It is the Pettengill bill, for liberating the railroads from the "long and short haul" clause restrictions. The other bill is the epitome of the ambitions of advancing socialism. It is the Wheeler-Crosser "job freezing" bill, which, if successful, would very seriously interfere with further increases in railroad efficiency and economy, and, if not invalidated by the Supreme Court, make socialization of railways more difficult to avoid by reducing the hope for profits, which are necessary if private enterprise is to function.

The Pettengill bill, which has passed the House and now reposes with the Senate committee on interstate Commerce, would permit the railroads to make rates to meet competition where it exists without the necessity of making similar rates to intermediate points where competition does not exist. When the long-and-short-haul clause, prohibiting lower rates for the long than for the short haul, was enacted competition in transportation existed only to a limited degree. Since that time, the development of truck and *water transport has already given the lower rates to the long haul points.* The railroads, in seeking relief from the fourth section, are merely asking that they be regulated in the light of present day conditions of competition in transportation, and not on a basis of monopoly conditions which have disappeared.

Has Private Enterprise Any Virility?

The enforcement of the fourth section against the railroads, when the truck and water lines are providing the rate discrimination which it was designed to prevent, is comparable to an attempt to enforce the Volstead Act after the repeal of the Eighteenth Amendment. No basis exists in law for the latter and no basis exists in logic or public policy for the former. The Pettengill repealer is, so to speak, a test of strength between the virility of private enterprise and socialism: Can the grip of government control be loosened once its social justification has disappeared, or must the struggle between private enterprise and government be an unbroken retreat by the former? All industry and all believers in private enterprise have a stake in the success of this measure before the Senate. Its victory would be the greatest set-back which steadily advancing government encroachment has yet received.

Freedom from rate discrimination is a desirable goal, but federal regulation of railroads has failed to achieve it and, with water and truck competition, can never achieve it. The continued effort to enforce the provision upon the railroads alone achieves no useful purpose, but instead is merely arbitrary tyranny. The public has accepted the fact that the federal government is a bungler in the regulation of individual liberty; it must now recognize that there are limits also to its effectiveness as a regulator of economic activity. The Pettengill bill symbolizes a counter attack by private enterprise at a point where encroaching bureaucracy is most vulnerable.

Wheeler-Crosser Bill a Symbol of State Socialism

While the Pettengill bill gives free enterprise a strategic issue of unusual clarity about which to rally its forces, the onward march of socialism also has its advancing wedge in the Wheeler-Crosser job freezing bill. This bill would forbid every railroad, without the approval of the Interstate Commerce Commission, to consolidate stations, discontinue poorly patronized trains, consolidate shops or curtail activities in any way; and employees whose services the public no longer utilized would nevertheless continue to receive compensation for a considerable period of time at the expense of railway owners, and to the detriment of employment in occupations for which a public demand exists. Managerial authority to discontinue unwanted and unpatronized services, without government permission, would be abolished.

There exists no valid excuse whatsoever in public policy for the enactment of this bill. There is a Railway Labor Act which provides machinery for joint negotiations between the railways and their employees

as to working conditions; and negotiations to protect employees from discharge following consolidations or co-ordination of facilities of different railways have been in progress for months. There is no social purpose to be served in invading by law a field where machinery for negotiation exists to settle the question at issue. The Wheeler-Crosser bill represents a gratuitous invasion of governmental authority which can serve no purpose except to promote disappearance from the railroads of adaptability to changing conditions. It would, unless invalidated by the Supreme Court, represent a long stride toward government ownership, by restricting opportunity to meet competition and increase net earnings.

A Few Weeks Will Decide the Issue

Yes, the railroads are the first line defense against state socialism. And it is about time that the foes of socialism realized that a critical battle is now being waged on that "first-line." On the one side, there is an offensive against socialism epitomized in the Pettengill bill. On the other hand, there is the Wheeler-Crosser bill which contains and symbolizes all the aspirations of militant socialist and labor union encroachment on private enterprise. The outcome of these two bills will in large measure determine the nature of the relationship which will exist between government and private business generally in the years just ahead. Will business be in definite retreat before victorious state socialism, or will the invading government meddlers henceforth have to assume the defensive? The way which believers in private enterprise rally to their "first line of defense," or fail to rally—for the Pettengill bill and against that sponsored by Messrs. Wheeler and Crosser—will, in the next few weeks, provide the answer.

Equipment Markets

During the first quarter of this year there have been reported in *Railway Age* domestic orders for 88 per cent as many locomotives, 47 per cent as many freight cars and 58 per cent as many passenger-train cars as were ordered during the entire 12 months of 1935. Also, the tonnage of rails ordered this far in 1936 is 72 per cent as large as that ordered throughout last year.

In the locomotive markets, where the comparison is most favorable, the 1936 total of steam locomotives ordered is already more than twice as large as last year's 12-months figure, being 63 as compared with 28. In addition to this 63, orders have been placed this year for 10 Diesel-electrics, thus bringing a 1936 total to March 31 of 73, exclusive of power units for four streamlined trains. This compares with orders for nine locomotives (all steam) during the same period last year, and with total 1935 orders for 83 locomotives of all types. Furthermore there was outstanding on March 31 inquiries for eight steam and 7 Diesel-electric locomotives and plans had been announced for the purchase of 10 others of the former type. In the month of March alone 13 locomotives, all steam, were ordered.

The first quarter's domestic freight car orders totaled 8,913 of which 627 were ordered in March. This compares with 830 ordered in the first three months of 1935 and 18,699 during last year's 12 months. On March 31 inquiries were outstanding for about 2,500 freight cars and another prospective purchaser was asking alternate bids on 3,000 cars and 3,000 underframes.

The situation in the passenger car field remains the same as outlined in the *Railway Age* of March 7, with 1936 orders to date for 37 cars, excluding units for four streamlined trains, as compared with 63 passenger-train cars ordered throughout 1935. No additional passenger train cars were ordered last month. There remained outstanding, however, the inquiry for 50 coaches.*

Rails ordered thus far in 1936 totaled 359,600 tons as compared with 186,400 tons ordered during the first three months of last year and with total 1935 orders for 495,300 tons.

The Slow Order

One of the developments from the markedly faster schedules for passenger trains during the last year has been a new appreciation of the serious effects of slow orders or speed restrictions on these schedules. This arises from the fact that the rate of acceleration of trains decreases rapidly as their speed increases. The effect of speed restrictions is shown strikingly in tests made by the Pennsylvania with its new electric locomotives, the results of which were set forth briefly in an address which Robert Faries, assistant chief engineer-maintenance of that road, presented before the Western Railway Club, an abstract of which appeared in the *Railway Age* of April 4. The results there presented have been corroborated by the experience of other roads.

When it is realized that, with the locomotive in question, it takes 3.14 miles to accelerate from a speed of 30 miles an hour to a speed of 75 miles an hour on a level grade and that it then takes 3 miles more to accelerate from 75 miles an hour to 90 miles an hour, the increasing effect of a slackening of speed in the higher-speed brackets is evident. This places a new importance on the speed restriction and focuses attention on its elimination.

Heretofore, slow orders have been given scant consideration. Maintenance of way forces have used them freely as a means of expediting their work. Engineering officers have designed layouts that required them

* The order for these 50 cars, reported elsewhere in this issue, brings 1936 passenger-train car orders to date to a total of 87, or 24 in excess of last year's 12-month total of 63—both exclusive of units for streamlined trains.

to avoid more expensive construction, and municipalities have applied them unnecessarily, frequently as a punitive measure. And these restrictions have, until now, been taken largely as inevitable.

With the initiation of these faster schedules, however, these speed restrictions assume major importance. First to receive consideration should be the activities of maintenance forces, looking to the development of means for doing their essential work without requiring the slackening of speeds more than is absolutely necessary. Likewise, this new condition requires the study of every physical characteristic which limits speeds to determine whether it is feasible economically to remove it. This subject now requires a new approach, for we are definitely in the beginning of an era of higher train speeds and every factor which limits those speeds unnecessarily warrants serious consideration.

Ideas From Abroad

North America is a vast continent and our transportation systems have been developed on a large scale. When steadily increasing traffic brought periodic congestion the importance of greater efficiency and more effective use of plant was recognized, and more and more consideration was given to refinements in design of equipment and facilities. In recent years attention has been focused upon more economical operation and to the need of still greater attention to refinements in the details of design and operation.

In some instances, splendid results have been obtained by introducing, with modifications to meet our own conditions, ideas and designs which have been developed on foreign railways. Our carriers, however, have never made a practice of regularly and systematically sending representatives abroad, in the effort to discover good things which might be applied to advantage here. Possibly this generalization needs some modification, because for a considerable period one railroad has been regularly sending officers of various departments to Europe each year. A few other roads have occasionally sent representatives abroad to make a study of specific improvements which have been called to their attention.

Our relative insulation from imported ideas is, however, quite in contrast to the practices of some of the foreign railways, probably the most notable in its systematic quest for ideas from overseas being the Japanese Government Railways. It has been a policy of this system to send considerable numbers of junior railway officers to different countries, their tours covering a year or two years, and involving critical examination and studies of the various phases of railway administration and operation. While the railways in other foreign countries have not sent as large a number of representatives to the United States as have the Japanese lines, yet many of them make a practice of systematically checking up advanced practices in this country. In recent years English railway officers, in particular, have visited these shores in imposing numbers. Some of them come here periodically—every year or two. Railway men from almost every important country in the world have, to some degree at least, a first-hand knowledge of American railway practices.

Railroad officers from this continent who have gone abroad, and have allowed themselves sufficient time to study with reasonable thoroughness some phase of railway practice, usually come back with practical ideas which they can adapt to their own conditions, even though these differ radically from those met with abroad. It seems quite likely that, as our railways are forced to go to greater and greater refinements in the effort to improve transportation and produce it at the lowest possible cost, there exists a greater need than ever for acquainting ourselves with railway practices which have been developed abroad under different conditions and surroundings, but which may with profit be adapted to our situation.

Bill to Give I. C. C. Unwarranted Power

An innocent looking little bill—Senate No. 1636—now before the Senate Committee on Interstate Commerce, the purpose of which is to amend Section 15 paragraphs (1), (3) and (4) of the Interstate Commerce Act, should not—but probably will—pass.

This bill knocks out the restriction in the present law upon compulsory "short-hauling" of a railroad carrier, and gives the Commission plenary powers to compel the establishment of through routes between rail carriers or rail and water carriers "whenever deemed by it to be necessary or desirable in the public interest." With this power in its hands it could—and would as its own report shows (107 I.C.C. 523)—have ordered the Missouri Pacific, for instance, to join with the Fort Smith, Subiaco & Rock Island and the Chicago, Rock Island & Pacific in a through route from Memphis to Fort Smith, totalling 308 miles and giving the Missouri Pacific a haul of 46 miles when Missouri Pacific had its own line of 311 miles between the same two points. And this to give the Fort Smith, Subiaco & Rock Island (a weak road) a "bridge" haul of 54 miles!

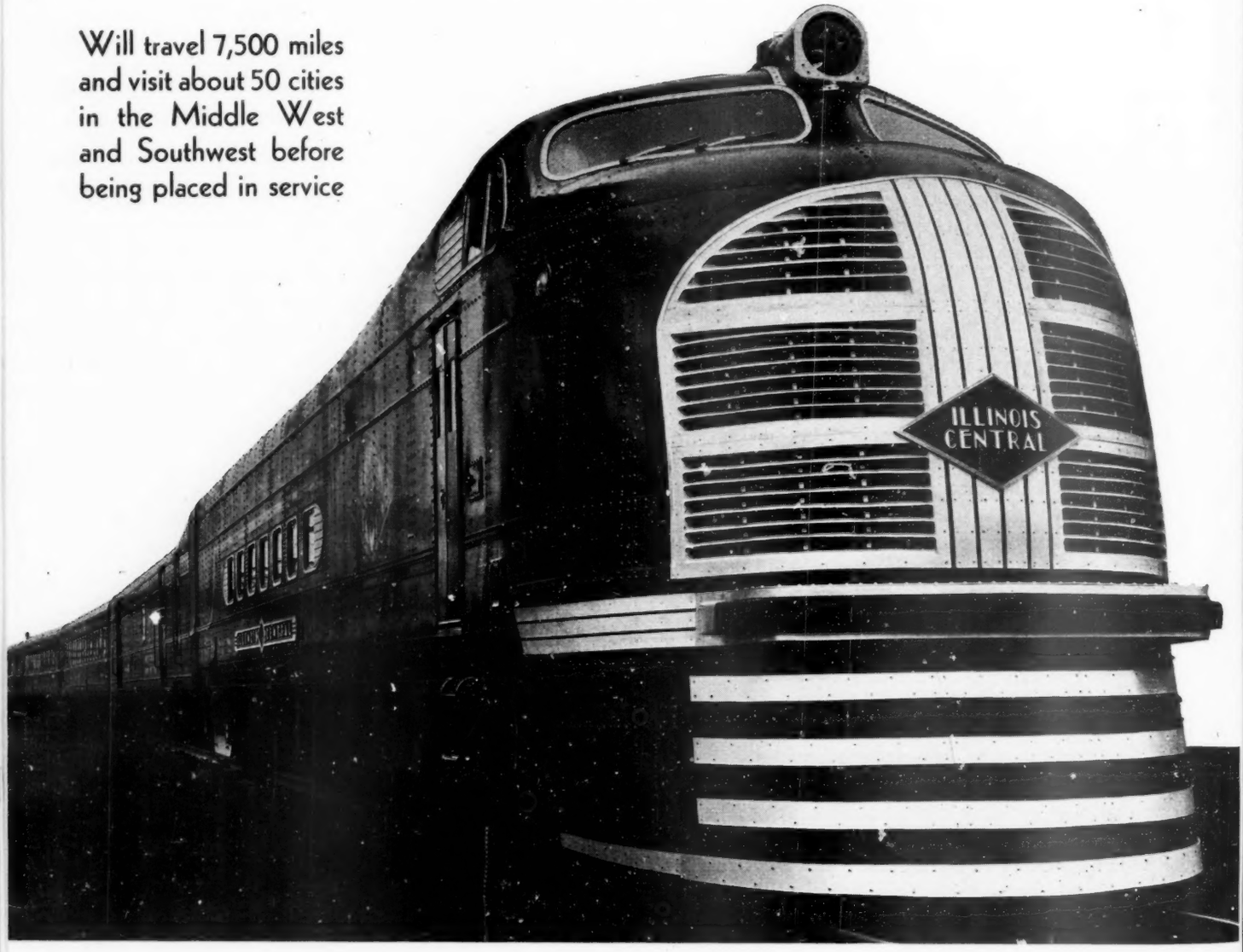
The Commission attempted to deprive Missouri Pacific of the haul from its own terminus in Memphis to within 46 miles of its terminus in Fort Smith—266 miles—and of the revenue from that haul in order to give the Subiaco line a haul of 54 miles. As a dissenting opinion said at the time, it was proposing to take $5 from Peter (Missouri Pacific) to give $1 to Paul (Subiaco)—a proceeding which had no justification from any point of view.

The right of a carrier to its "long haul" is a common law right growing out of the very nature of "common carrying," and it is very much "in the public interest" that it should not be set aside by statute or restricted in any important degree.

—From an Article by Thomas F. Woodlock in the Wall Street Journal.

Illinois Central High-Speed Train Goes on Extensive Tour

Will travel 7,500 miles and visit about 50 cities in the Middle West and Southwest before being placed in service



THE Green Diamond, a 5-car, articulated, Diesel-electric train which was delivered to the Illinois Central, as set forth in the *Railway Age* issue of March 28, has made several satisfactory test runs between Chicago and St. Louis, Mo., and is now on an extensive exhibition tour of about 50 cities in the Mississippi Valley, the Southwest and the Great Lakes Region. About six weeks will be required to make the 4,000-mile exhibition tour on Illinois Central rails and the 3,500-mile off-line tour which are planned. The exhibition tours will be completed in time to place the train in regular Chicago-St. Louis service on May 17. Sustained speeds well in excess of present schedules will permit this train to make a round trip daily, supplanting two steam trains now required for comparable service.

The new Illinois Central train, designed by the Pullman-Standard Car Manufacturing Company, was built at the Pullman Car Works at a cost of approximately $425,000. It consists of five streamline, articulated car bodies embodying, primarily, riveted Cor-Ten steel construction, although there are about 6,800 lin. ft. of arc welding and 5,100 machine spot welds in the car frames. Aluminum is extensively used for interior finish and decorative features.

The train, with a total seating capacity for 120 passengers, plus 24 seats at dining tables, is air conditioned throughout and provided with modern dining-car facilities. It operates on six roller-bearing trucks, and has a light weight of 476,800 lb., or about 50 per cent of the weight of an equivalent steam train. It is driven by an Electro-Motive 1,200-hp. power plant, with electric generator and motors furnished by the General Electric Company. It is expected that the train will make about 1.5 miles per gal. of fuel oil and 35 miles per gal. of engine lubricating oil. Water consumption for both engine cooling and train heating will depend largely upon

outside temperatures, and in a recent test was 700 gal. for a one-way trip of 293 miles.

The over-all length of the train is 328 ft. 6 in. and the five body units having general arrangements, dimensions and seating capacities as shown in the drawings, include a power unit, a mail-baggage unit, two chair units and a diner-observation unit. Each of the three passenger-carrying bodies has a side entrance door on each side, and the diner-observation unit is provided with an emergency end door.

Exterior Painting and Decoration

The exterior of the train is smartly styled. Striping lines are used to express speed and raciness; curves and masses are handled to give an impression of dynamic power and strength.

Two shades of green are used for the exterior colors. The darker shade, a cypress green, is used on the front end, stepped down with striping lines and then used on all surfaces of the train, including trucks, below the window sill lines. The lighter shade, a cedar green, is used above the window sill lines, including the roofs. Striping lines of silver and scarlet separate the two greens in sweeping curves on the power unit to the window sill line, continuing on this line throughout the balance of the train.

Lettering of silver aluminum and scarlet is carried out in a modern style. The name of the train, Green Diamond, is worked out in a diamond design with letters of silver and scarlet and applied to both sides of the power unit. A cast aluminum name plate with the words "Illinois Central" in highly polished letters, separated by a green diamond outlined in silver, is also applied on each side of the power unit, under the windows.

Alumilite finish castings and moldings are used on the front air intake grilles, pilot, bumper parts, front cab sash frames and ornamentations at the side sash of the power car to give a bright accent to the paint colors. A cast aluminum train sign of diamond shape is applied to the front of the power unit; and a similar shaped sign, having a translucent green formica face panel with illuminated words "Illinois Central," is applied on the rear end of the train.

General Construction of the Underframes and Car Bodies

The underframe assembly in each of the Green Diamond bodies is a combination of riveting and spot welding. The center sills are of web and cover plates with rolled chord angles. The floor beams are of pressed-steel shapes. The bottom sheet stiffeners and struts between these stiffeners and the floor beams are of drawn or pressed shapes, as are the longitudinal floor stringers.

The bottoms of the car bodies are completely enclosed, brake equipment, reservoirs, tanks, piping, etc., being located in the space between the floor and bottom sheets, accessible through removable floor doors.

The side-sill construction is a combination of drawn members and rolled plates, attached to the car bodies by rivets and welding. Side posts are of pressings; where box sections are used, these are formed by welding after these posts were set in place.

Carlines and purlines are of pressed shapes. Roof sheets are riveted. End frames at articulated ends are a combination of riveted and welded construction. End sills are of entirely welded construction, riveted to the framing members. Diagonal braces are used at the ends to tie the shoulder construction to the end sills, connections on end sills being adjacent to the door posts.

The streamline rounded front end of the power car is of built-up angles and plates to form an anti-telescoping construction. The rear end of the train is also of streamline design, provided with observation end sash and emergency door.

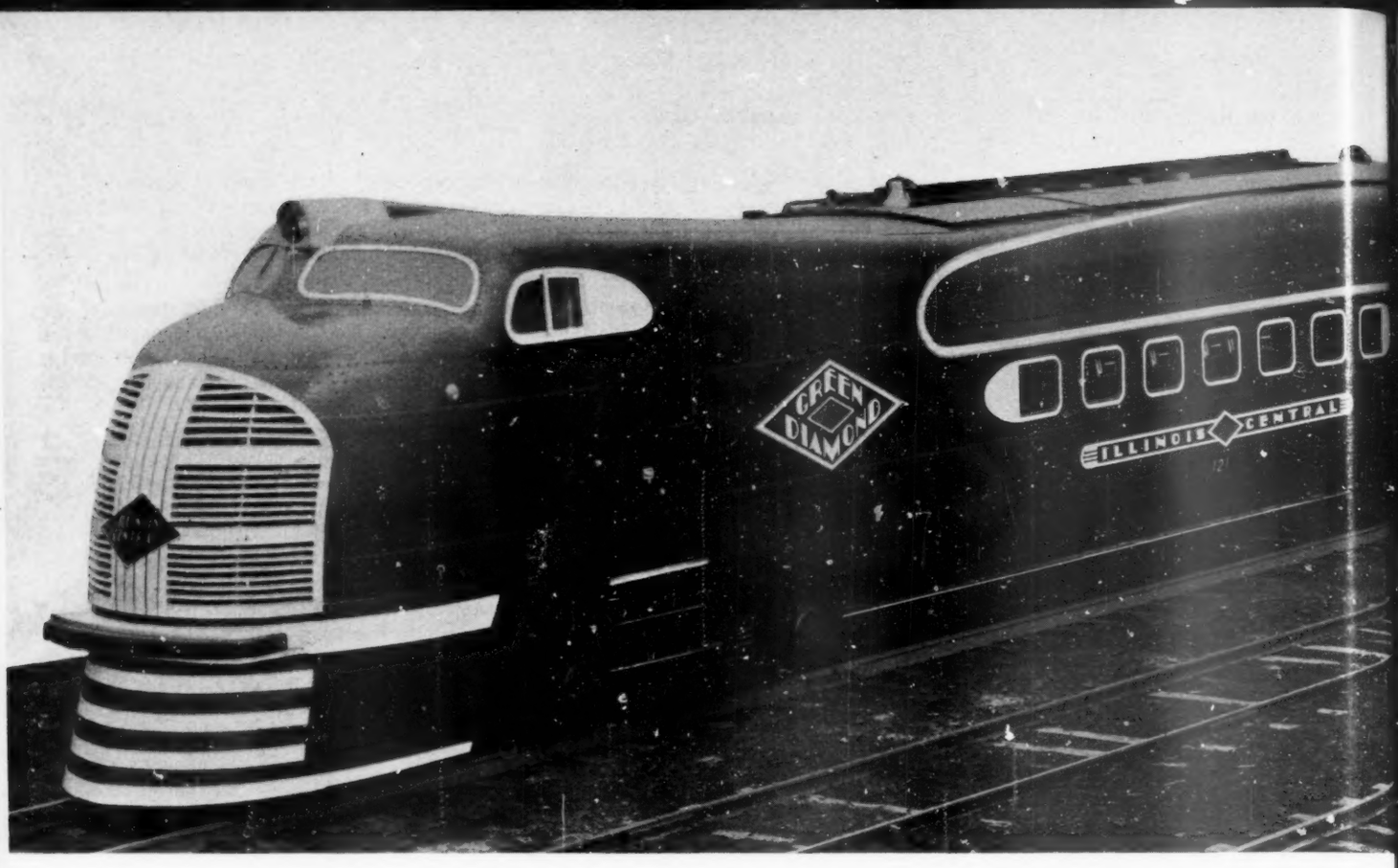
The cab in the power unit and the balance of the body units in the train are well insulated. The insulation is 2-in. light-weight Salamander, a hair felt insulation with asbestos paper on both sides and asbestos paper in the center of the insulation, except in welded construction members such as posts, shoulder construction, etc., where rock type insulation is used.

The bottoms of the bodies, which are completely enclosed, are likewise insulated; the insulation, however, being covered with Sisal-Kraft paper which is wrapped and sealed with waterproof cement to protect it against any condensation that may accumulate within the enclosed area. Drain holes with removable plugs are also provided in the bottom sheets.

The body articulation eliminates the use of couplers, draft gears and the vestibule mechanism, such as commonly used in the conventional types of passenger-carrying cars. The articulated feature also reduces the number of trucks to service and maintain to six instead of ten, as would be required for a similar train of separate cars.

The center plates extend from the end sills on each body unit, nesting in a common center plate on the trucks. The gaps between the units are entirely closed at sides and roofs by means of diaphragms made of extra-stretch pigmented sheet rubber, spanning from one body to the next. The passageways between the bodies are also enclosed and dust tight, inner diaphragms being used. These also are made of extra-stretch rubber. A drawbar, for emergency use at either the front or the rear end of train is carried on the train.

The train is heated by a Vapor, 800-lb.-per-hr., high-pressure, oil-fired steam boiler, burning the same fuel oil as that used in the main Diesel engine. Fin tubing



and piping of copper are used in connection with the reduced pressure Vapor heating system. The steam train line and other piping under live steam pressure is of steel pipe. Vapor 1½-in. flexible-armored hose connections are used between the body units.

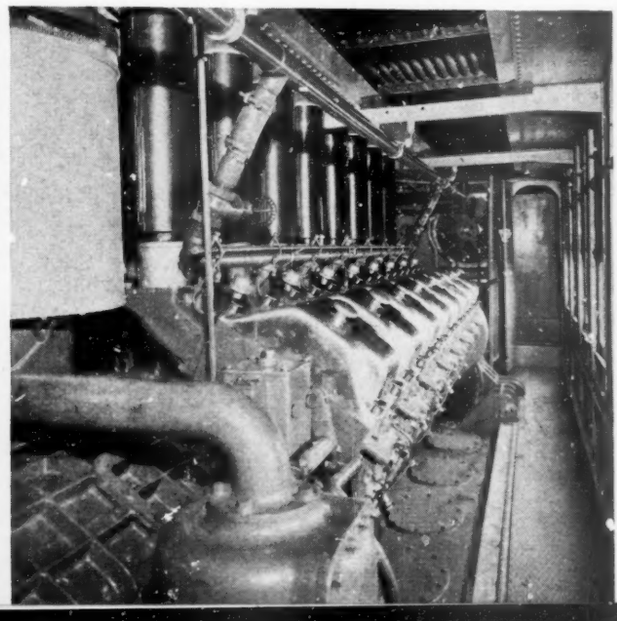
The chair-car bodies and the diner-observation unit also have preheated air admitted through grilled duct openings in the side walls at floor level, this air operating in conjunction with the air-conditioning system.

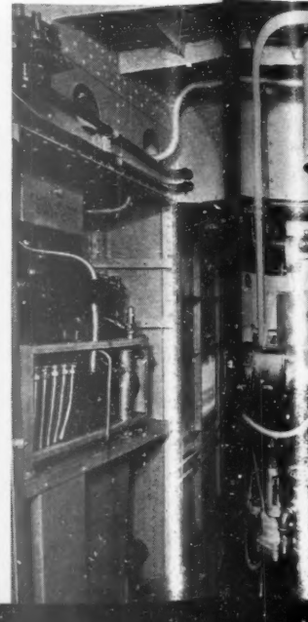
Both of the chair cars and the diner-observation car are provided with air conditioning equipment. This comprises dual units used in both heating and cooling and located in compartments, one on either side of one end of each body. Each compartment contains in the lower section a complete Frigidaire condensing unit comprising a 3-ton compressor; a 5-hp., 220-volt, 3-phase, a.c. motor, driving the compressor; a condenser fan mounted on the opposite end of the motor shaft; a condenser; a receiver tank; and necessary piping. Air for the condenser is drawn in through the floor, blown over the condenser and out through the side of the car.

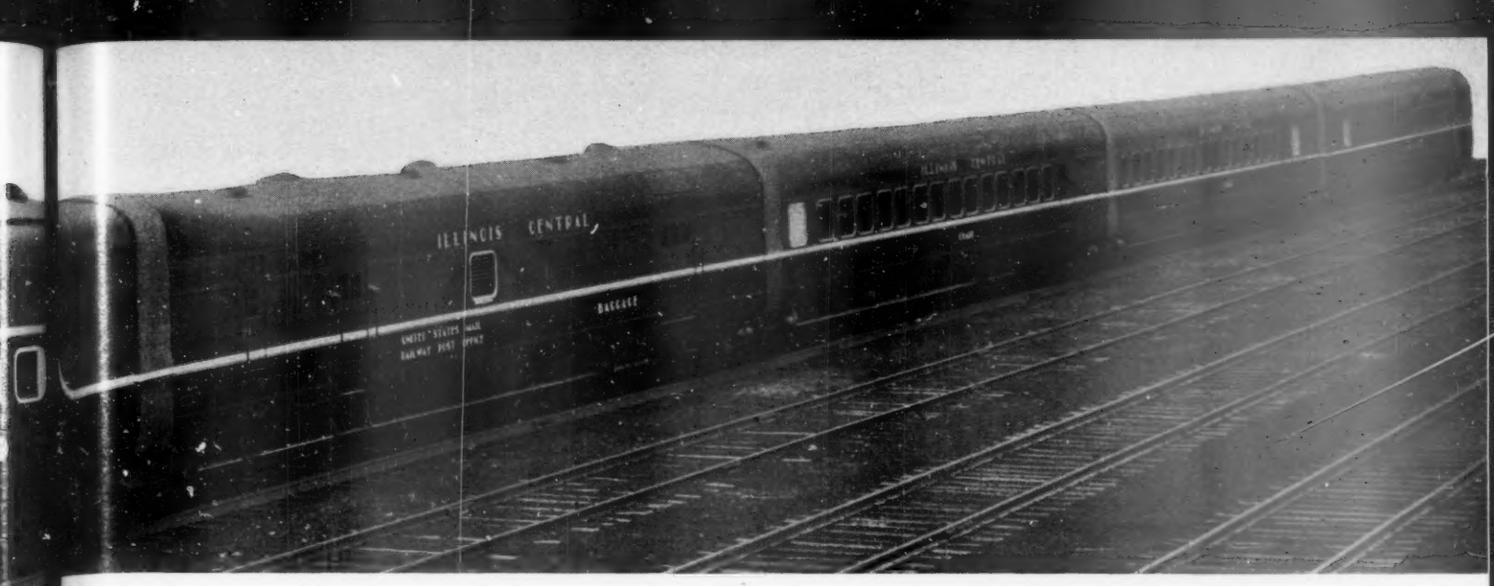
The upper section of the compartment comprises the cooling and heating equipment, including blower fans, filter, heating radiator, cooling coil and the necessary piping, fittings, valves, etc. Air circulation is reversible; that is, during the cooling season, air is supplied to the interior through overhead ducts, returned through floor ducts, one on either side of the car, to the cooling compartment where it is cleaned, cooled and again circulated. In the winter, warm air is supplied through floor ducts and the overhead duct serves for the return. Fresh air in all cases is drawn in through the side of the body unit in quantities of 20 to 45 per cent. Dual fans are used in each compartment, one fan serving as a suction fan, drawing the air from either the floor or overhead ducts, blowing it into the cooling and heating chamber. A second fan draws the air from the cooling and heating chamber and blows it into the floor or overhead ducts. Dampers in the compartment are used to direct the air flow to either of these ducts. The two

The Operator's Station and the Control Equipment

The 1,200-Hp., Two-Cycle, 16-Cylinder, V-Type Main Diesel Engine







Another View of the New Illinois Central Five-Unit Articulated High-Speed Train

units on either side of the car body are connected in parallel and have a capacity of approximately 1,800 cu. ft. per min.

Floor heat coils under thermostatic control are used as the balancing element in maintaining interior temperatures. Vapor thermostatic control is used for both cooling and heating. Essentially, this control is the same as used on standard air conditioned cars.

Features of the Brake Equipment

Brake equipment for the Green Diamond consists of the Type H.S.C., light-weight design with Decelakron electro-pneumatic control, furnished by the New York Air Brake Company. Copper tubing and copper fittings are used throughout except on the trucks and pipes extending outside of the bottoms of body units, which are of heavy steel pipe.

A National staffless type of hand brake is provided in the engine room which operates on the front truck. A Blackall lever-handle type hand brake is provided at the forward end of the rear unit.

Water supply for the mail compartment is provided by a gravity tank. Each of the two chair cars and the diner-observation car has an air pressure water system providing water for the filtered drinking-water coolers, washstands and the hoppers; this system also supplies water to the kitchen.

The water capacity for each of the two chair-cars is 50 gal., and for the diner-observation car, a total capacity of 250 gal. is provided. Water tanks are of galvanized steel; those for the air-pressure water system are located below floors in the respective cars. Copper water piping and fittings are used throughout. The hot-water supply is provided by means of jackets in the steam train line; the kitchen hot water is supplied through a coil in the oil-burning range.

The main sash in the passenger compartments and also in the mail compartment have hermetically-sealed, dehydrated unit-type glass, furnished by the Pittsburgh Plate Glass Company, in extruded aluminum frames. Each unit is made up of two lights of ¼-in. laminated glass, each light consisting of ⅛-in. Violex laminated against ⅛-in. Crystalex glass.

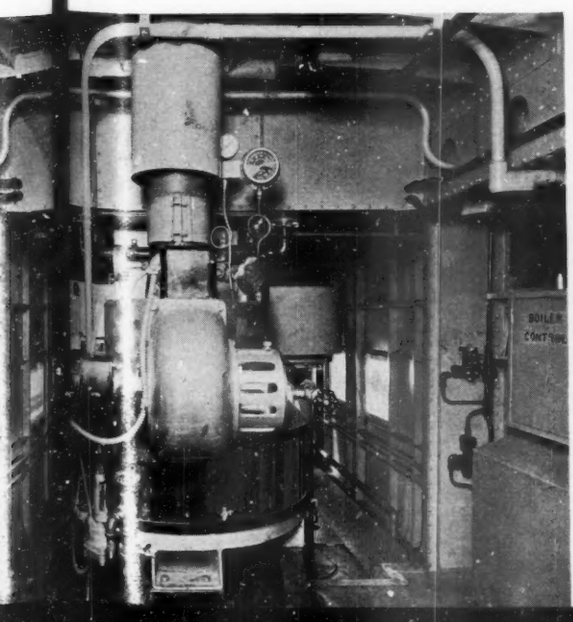
The toilet rooms have similar unit-glass, the outer light being of ¼-in. translucent design. The power unit has single glazed ¼-in. safety glass in hinged aluminum sash frames.

Interior Decorative Treatment and Furnishings

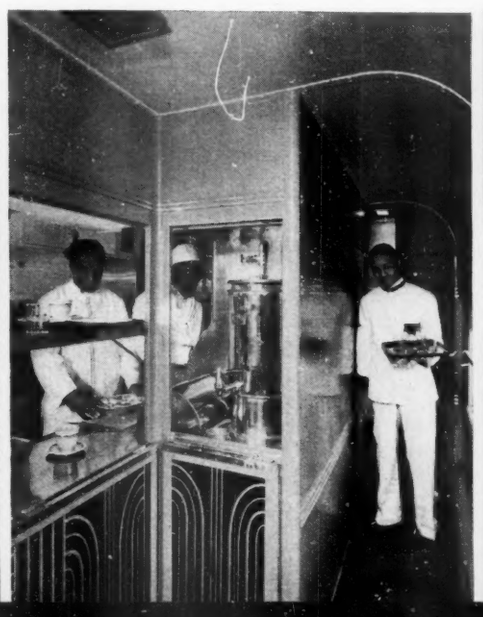
The interior finish and head linings in the passenger cars are of aluminum alloy, the wainscoting being of pressed composition board.

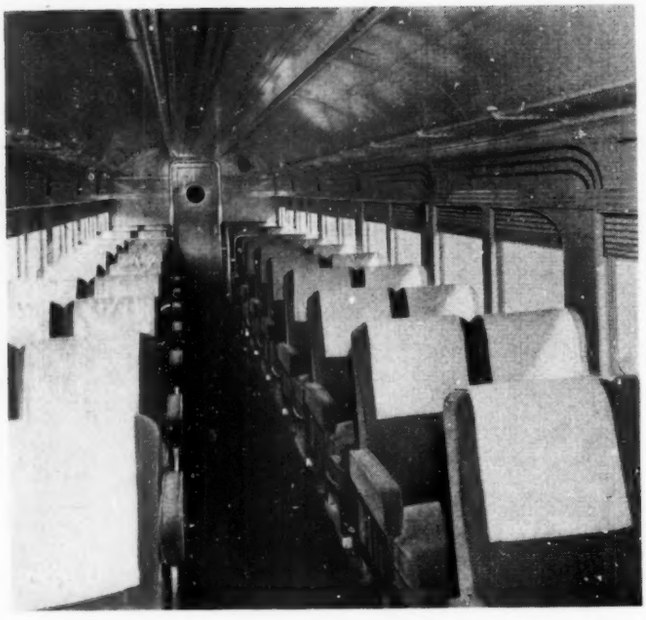
The interior decorative treatment of the passenger compartments, designed by Pullman, is notable and conveys the distinct idea of speed and decisive movement. Horizontal moldings with satin-finish aluminum faces running in unbroken lines from one end of each compartment to the other are used above and below the windows. The foward ends of each double window are given speed-line curves and further accentuated by polished aluminum moldings. Three decorative satin-finish aluminum moldings repeating the speed-line curve of the

Vapor High-Pressure, Oil-Fired Steam-Heat Boiler



Meals Can Be Served to Passengers in Their Seats





The Seats Have Individual Reclining Backs

window are used on the frieze panels over each double window. The result in effect is one of modern simplicity but extremely dynamic in movement, due to the judicious handling of speed curves and unbroken horizontal lines.

The two chair cars are handled decoratively as a unit, with blue-grey walls, ivory ceilings and darker blue wainscotings. Floors in the chair compartments are covered with cork tiles finished in natural shades. Marbleized linoleum, in shades of brown and tan, is used in vestibules, passageways and toilets. Carpet of deep raisin tones with an interesting curved line pattern in a slightly lighter tone is used for an aisle strip in the chair compartment.

The unusually comfortable seats are of the three-position, reclining-type with satin-finish aluminum pedestals and fittings. A two-tone line-pattern of acorn-colored mohair, with the lines running transversely, is used for seat covering.

The window shades are silk-faced with horizontal lines in raisin and acorn colors on a tan background, recalling the color of the carpet and seat covering. All of the fittings in the chair cars are especially designed to suit the interior. Basket racks enameled to match the ceiling are of a special type and, by their design, are made to look part of the car rather than an applied feature.

Ash receptacles are recessed into the back of each seat and combine attractive appearance with ready accessibility. Removable card tables and tables for the dining section in the chair cars are of a black formica with inlaid tops and edges of satin-finish aluminum.

Toilet rooms in both the chair cars and diner-observation car were given special consideration, both as to appearance and arrangement. The walls and ceilings are in a tan stippled finish and all fittings are in satin-finish aluminum.

The diner-observation car has the same design of finish as used in the chair cars, but is distinctive because of colorings and furnishings. The walls are finished in sea green with ivory ceilings and darker green wainscotings. Further distinction is given by using a band of tan color in the frieze panels to accentuate the decorative moldings and to give a horizontal band of color around the observation room. The same kind of carpet and window shades used in the chair cars are used here, furthering the feeling of train unity.

The dining section at the forward end of the observation room has aluminum frame chairs in satin finish, upholstered in a gold-colored, horizontal-line pattern mohair. The dining tables are black formica with two inlaid aluminum lines in the top, and with three satin-finish aluminum lines inlaid on the edges.

Lounge chairs are of three types, of a special design, having a special bleached walnut finish on the exposed wood portions. Three types of seat coverings are used; one, a green modern design to tone with the green walls; another of raisin color similar to the carpet; and the last, a key fabric of tan, green and raisin, to tie all the colors together.

Two aluminum-frame lounge chairs and the aluminum-frame desk chairs (both in satin finish) at the extreme rear of the observation room are upholstered in the same gold-colored mohair as is used at the dining section at the forward end. The writing desks are in black formica with inlaid edges, the same as used on the other tables, and are placed on either side of the rear door.

All of the accessories for the observation room have been newly designed for the train—magazine tables of formica and aluminum, table lamps of satin-finish aluminum with black and white shades, and smoking stands of formica and aluminum in a new design, serving either as smoking stands or cocktail tables.

The linen and napkins for dining service have a three-line border, matching the colors of the carpet, seat covering and window shades, respectively; and the same colors and line motif are repeated in all of the china service for the train. The silverware is a new pattern, carefully worked out to be distinctive, and in complete harmony with the decorative scheme of the train.

Kitchen Equipment, Doors and Other Details

The kitchen is provided with an oil-burning range, broiler, warming ovens, urn and steam table. Polished stainless steel is used for table tops, sinks, chipped ice wells, facings of refrigerators, range, work tables and lower lockers. The interior linings of cold boxes, refrigerator compartments, racks, etc., are also of stainless steel.

Dry-ice refrigeration, automatically controlled, is used in the large refrigerators, cold boxes and ice-cream cabinet. The kitchen is provided with a serving bay to facilitate serving meals, which is open on three sides.

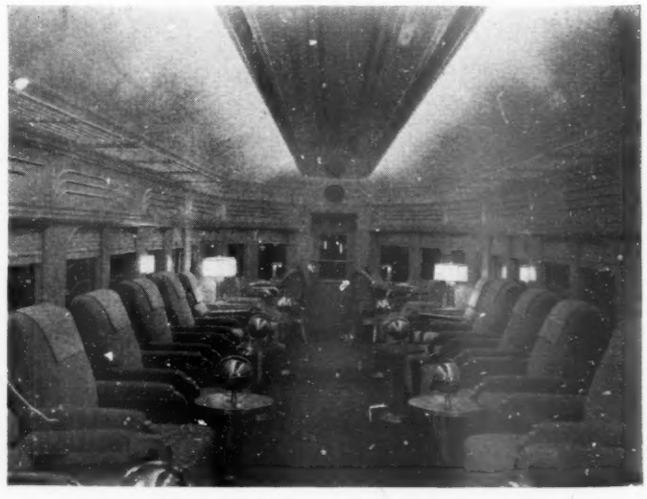
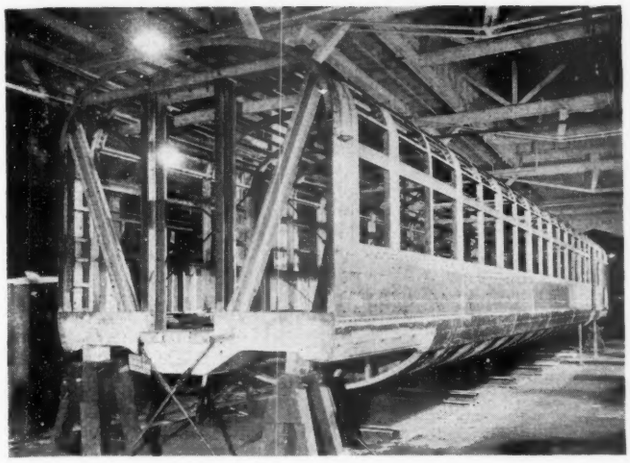
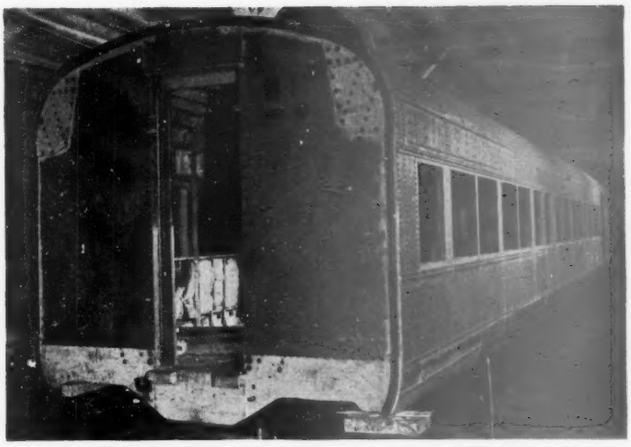


Table Lamps Supplement Indirect Lighting in the Observation-Lounge



The Body Framing



The Exterior Sheathing Applied

Ornamental panels of inlaid formica close off these openings when the kitchen is not in use. An annunciator for waiter service is provided with push buttons conveniently located in the diner-observation car and at the dining section in the chair car.

All exterior side doors are of steel construction; all end doors and interior doors are of aluminum construction. Passenger side entrance doors are of the hinged type, swinging inwardly. Baggage and mail compartment side doors slide on curved upper guides and lower tracks, designed to bring the doors flush with the sides of the train when closed. Main end doors and toilet-room doors in passenger-carrying bodies are provided with an anti-pinch feature.

Forged steps of designs to suit streamline conditions are provided for the cab and engine compartment, mail room and baggage compartment. The passenger entrance steps are of the pivoted type, operated with sprocket and chain mechanism so designed that the lower risers and tread form a part of the platform and door threshold, and the back of the step lines up with the contour of the car shell and entirely closes the step opening when in raised position.

Washstands in the passenger-carrying cars are of lightweight porcelain, provided with hot and cold water and liquid soap. Paper towel cabinets are provided in the toilet rooms of the two chair cars. Linen towels are provided in the toilet rooms of the diner-observation car. Paper drinking cups are furnished in the three passenger-carrying cars. Drinking-water coolers are equipped with filters. Table water for the dining service is also filtered. Hoppers are foot-pedal operated.

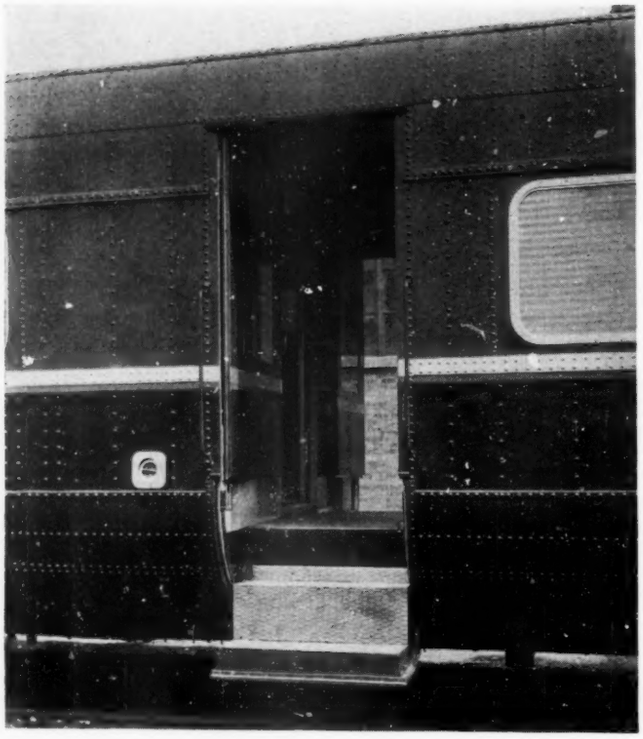
General Lighting System, Signals, Etc.

Indirect lighting from a central duct, forming an architectural part of the cars, is used in the chair cars. There are 200 lights in two troughs, these lights being rated at 15 watts. The lighting circuits operate at 110 volts. Similar indirect lighting, with 185 lights in two center ceiling troughs, is provided in the diner-observation car. Recessed ceiling fixtures of the flush type are used in vestibules, toilets and passageways.

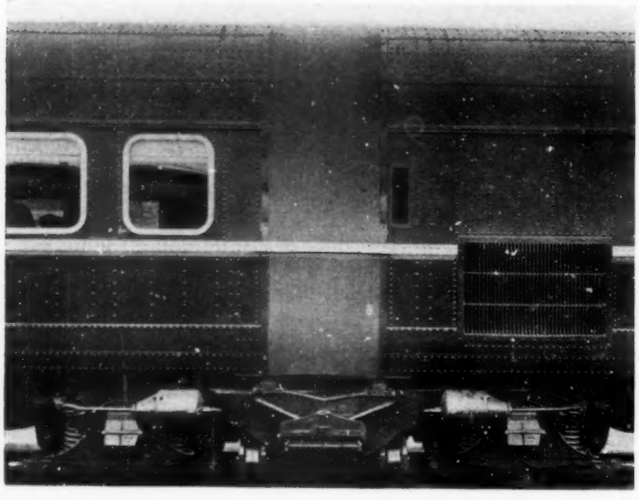
A Pyle-National horizontal headlight and a vertical-beam light are provided, these being in a housing on the roof over the operator's cab. An electric speed indicator is provided, driven from the end of the axle of one of the power trucks, with a dial mounted on the instrument board in the cab. Electric circuit connections between the units is by means of receptacles and jumpers.

Marker lights, consisting of double lights on each side of the car close to the rear end of the train practically flush with the contour of the exterior, are provided. One red lens and one green lens is used on each side of the car, so arranged that each light is controlled independently. This permits a green light to be shown on one

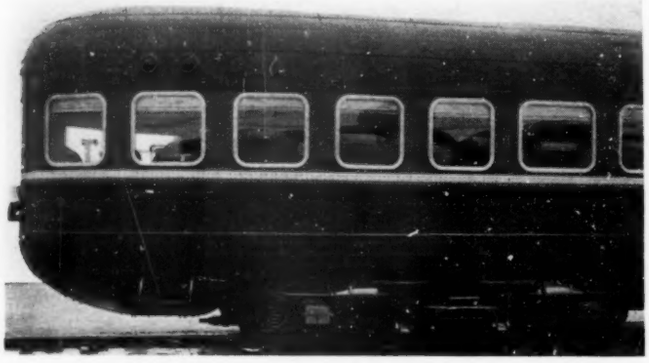
The Power Trucks Are Equipped with Commonwealth Cast-Steel Frames, Timken Roller Bearings and Simplex Unit-Cylinder Clasp Brakes



The Vestibule Entrance



A Diaphragm Connection and Intermediate Truck—The Large Air Grille Serves the Air-Conditioning Condenser; the Small Grille Is the Fresh-Air Intake



Double Marker Lights Are Built into the Rear End—Trailing Trucks Have A.S.F. Roller Bearings

side and a red light on the other side at the same time, if so desired. These lights are wired to the battery circuit. Classification lights are provided at the front end of the operator's cab on each side of the car, fitted with white and green lens.

The cab is provided with electric window wipers on each of the two front windows; two circulating fans on adjustable brackets are applied to keep the windshields from steaming up or frosting. The signal system consists of a buzzer in the operator's cab connected to push buttons, one conveniently located adjacent to each side door. Warning devices consist of a Tyfon horn and a 50-lb. Hammett bell with bell ringer. A Pneuphonic horn is located at the rear end of the train for use during backing-up operations.

Reclining seats in the chair cars have two types of cushions, installed for comparative test purposes. Half of the seats are of spring construction and the other half of rubber construction. The seats in the dining section are of the rathskeller type, those at the side walls being stationary and those at the aisle hinged to swing upward, for easy ingress and egress. These seats are provided with reclining backs, similar to those in the chair sections, so these seats, when not used for dining purposes, can be used for occupancy like the regular seats. All seats are numbered.

Weights of Car Bodies and Trucks in Illinois Central High-Speed Train

Light Weights			Light Weights of Body Units	
On No. 1 truck	73,320 lb.		Power	115,800 lb.
On No. 2 truck	65,100 lb.		Mail and bagg...	44,100 lb.
On No. 3 truck	46,070 lb.		Chair	52,210 lb.
On No. 4 truck	53,020 lb.		Chair	55,400 lb.
On No. 5 truck	62,290 lb.		Diner-lounge	69,040 lb.
On No. 6 truck	36,750 lb.			
On all trucks	336,550 lb.	336,550 lb.		336,550 lb.
Of No. 1 truck	32,680 lb.			
Of No. 2 truck	33,000 lb.			
Of No. 3 truck	18,790 lb.			
Of No. 4 truck	18,800 lb.			
Of No. 5 truck	18,850 lb.			
Of No. 6 truck	18,130 lb.			
Of all trucks	140,250 lb.	140,250 lb.		140,250 lb.
Light weight of train		476,800 lb.		476,800 lb.

Six serving-tray stands are provided in each chair car for use when individual tray service is desired.

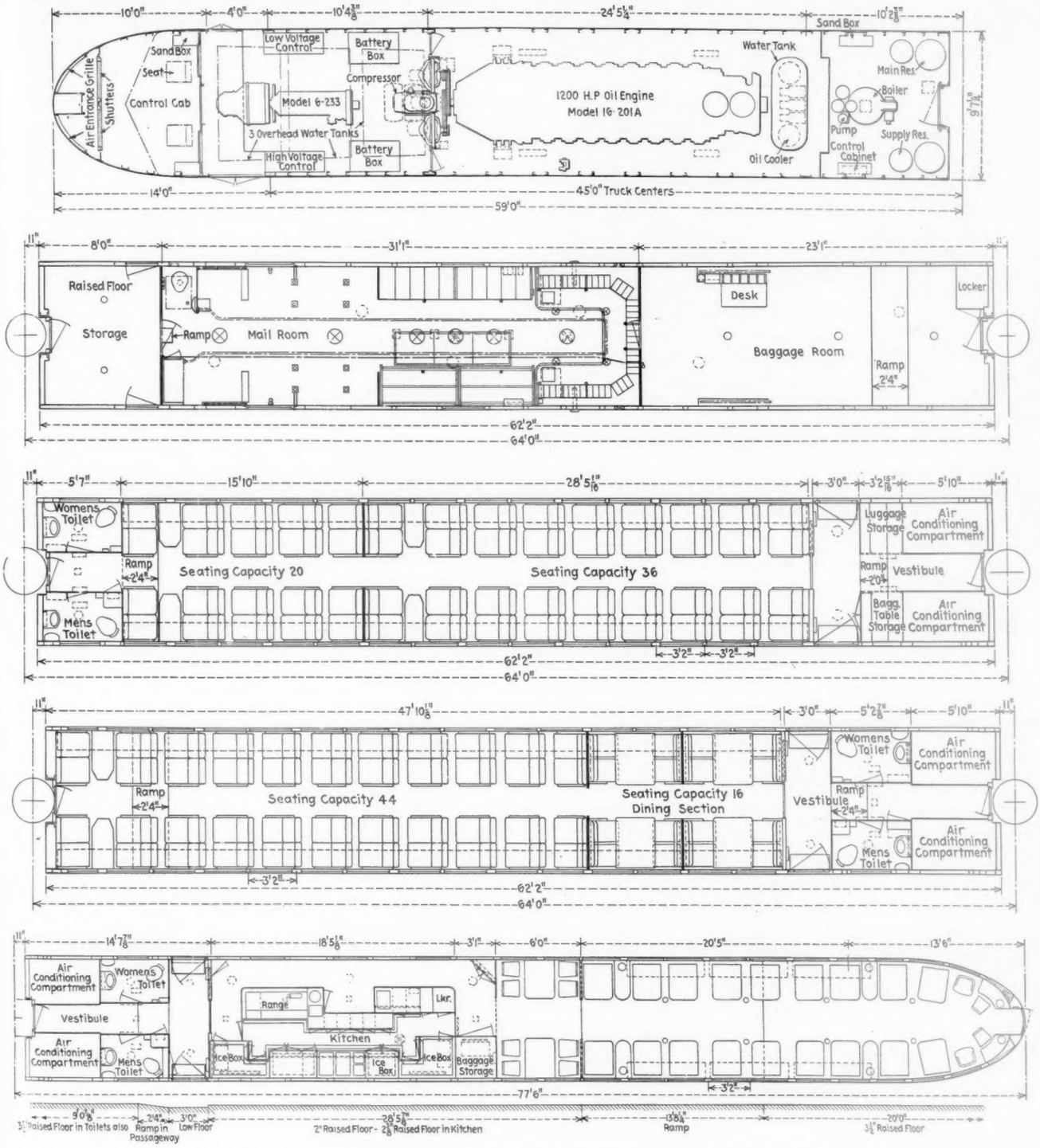
The train is equipped with a General Electric 12-tube deluxe radio located in the diner-observation unit adjacent to the kitchen, and is attendant-controlled. Loud speakers, with individual volume controls, are located at the forward and rear end of each car and the observation room.

Truck and Power-Plant Details

The trucks throughout the train are of four-wheel type, with Commonwealth frames of cast steel. The trucks supporting the traction motors, that is, the two forward trucks, have wheel bases of 8 ft. 4 in.; the remaining four trucks have 9 ft. wheel bases.

The wheels are of rolled steel, those on the motor trucks are 36 in. in diameter with 1 in. in 20 in. taper treads; the balance of the wheels are 33 in. in diameter with cylindrical treads. Timken outside-type roller bearings are provided on the axles of the two motor trucks. The remaining trucks have American Steel Foundries roller-bearing wheel and axle units with Timken bearings.

All trucks have Simplex clasp brakes and unit truck-mounted air-brake cylinders, one per wheel. Four brake shoes are used in two brake heads for each wheel. Points of contact between brake levers and truck frames are covered with fibre pads to dampen vibration and noise.



Floor Plans of the Five Articulated Body Units of the Illinois Central "Green Diamond"

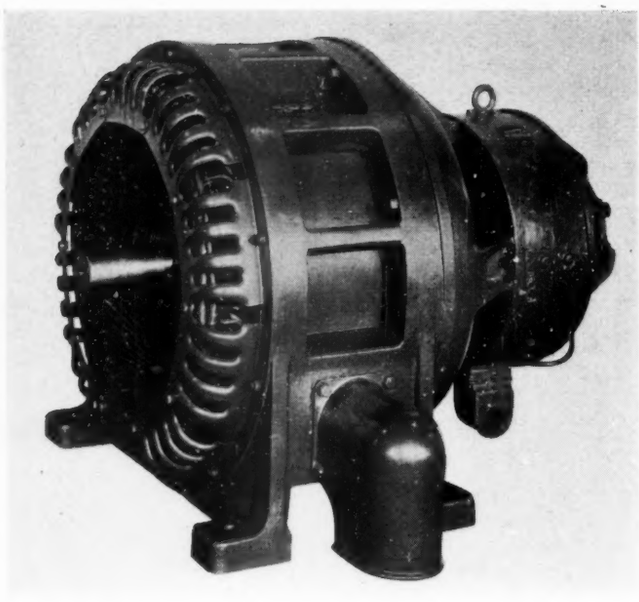
Manganese steel liners are used in the bottom of the first motor-truck center plate and between the body and truck center plate on the rear truck. All articulated center plates have manganese steel liners at all wearing surfaces.

All trucks at articulations and the rear truck have a double swing-motion, using auxiliary bolsters and spring planks and providing additional coil springs under the auxiliary bolster for easy riding.

The power-plant equipment in this train was designed and supplied by the Electro-Motive Corporation. The apparatus consists essentially of a two-cycle oil engine, engine control equipment, engine cooling system, engine exhaust system, engine lubricating system, electric transmission, transmission control apparatus, storage battery and charging equipment, auxiliary oil engine, auxiliary a.c. generator and mechanically driven air compressor.

The main engine is a V-type, 16-cylinder, high-compression, two-cycle oil engine of 8-in. bore and 10-in. stroke, developing 1,200 hp. at 750 r.p.m. Power for all auxiliaries driven by the main engine, directly or indirectly, is taken from the power plant in excess of its rating.

The cylinder block and crankcase have been combined into one unit of welded steel construction. The engine base of this power plant is of a unique design, incor-



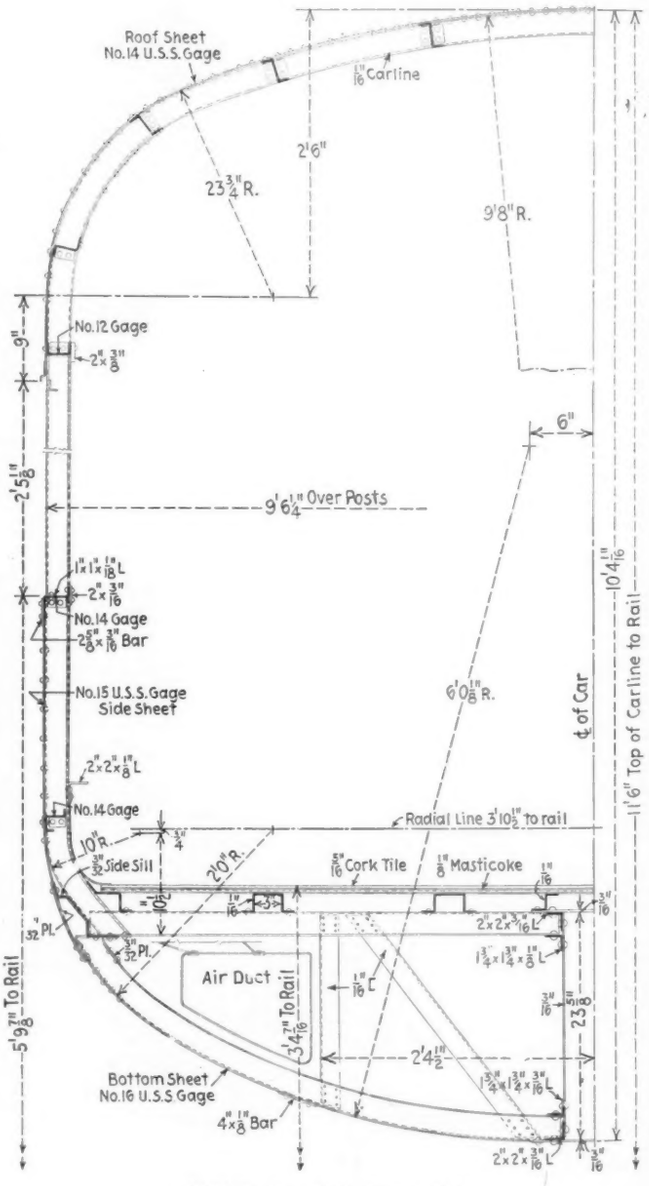
A 60-Kw. A.C. Generator which Supplies Power for Lighting and Air Conditioning

porating in a single welded steel assembly a sub-base for mounting the coupled engine and generator and a fuel supply tank.

The power produced by the prime mover is delivered to the driving wheels through an electrical transmission consisting of General Electric generator, traction motors

Partial List of Specialties Used on the Illinois Central High-Speed Train

Builder, complete train	Pullman-Standard Car Mfg. Co., Chicago
Cor-Ten steel	United States Steel Corp., New York
Castings	Burnside Steel Foundry, Chicago American Steel Foundries, Chicago General Steel Castings Corp., Granite City, Ill. Chicago Steel Foundry, Chicago Universal Draft Gear Attachment Co., Chicago
Power plant	Electro-Motive Corp., LaGrange, Ill.
Fuel fillers	G. A. Anderson Manufacturing Co., Baltimore, Md.
Expansion valves	Detroit Lubricator Co., Detroit, Mich.
Valves	Kerotest Manufacturing Co., Pittsburgh Lunkenheimer Co., Cincinnati, Ohio
Blower motor	Louis Allis Co., Milwaukee, Wis. B. F. Sturtevant Co., Boston, Mass.
Fire extinguishers	Pyrene Mfg. Co., Newark, N. J.
Electric generator and motors	General Electric Co., Schenectady, N. Y.
Exide batteries	Electric Storage Battery Co., Phila., Pa.
Engine pyrometer	Illinois Testing Laboratories, Chicago
Air compressor	Gardner-Denver Co., Quincy, Ill.
Air brakes	New York Air Brake Co., New York
Hand brake, power car	National Brake Co., Buffalo, N. Y.
Hand brake, rear car	R. H. Blackall, New York
Clasp brakes	American Steel Foundries, Chicago.
Brake shoes	American Brake Shoe & Foundry Co., New York
Emergency coupler	McConway & Torley Co., Pittsburgh, Pa.
Trucks and center plates	General Steel Castings Corp., Granite City, Ill.
Wheels and axles	Carnegie Illinois Steel Co., Pittsburgh
Roller bearings	Timken Roller Bearing Co., Canton, Ohio American Steel Foundries, Chicago
Springs	American Locomotive Company, Railway Steel Spring Division
Nuts	MacLean-Fogg Lock Nut Co., Chicago
Drive screws	Parker-Kalon Corp., New York
Rivets	Central Steel & Supply Co., Chicago
Aluminum parts	Aluminum Company of America, Pittsburgh, Pa.
Copper tubing	Streamline Pipe & Fitting Co., Port Huron, Mich.
Steel tubing	Steel Sales Corp., Chicago
Brass	American Brass Co., Waterbury, Conn.
Magnesia and asbestos	Johns Manville Corp., Chicago
Insulation	American Hair & Felt Co., Chicago General Insulating & Mfg. Co., Alexandria, Ind.
Rubber	United States Rubber Co., New York Manhattan Rubber Co., Passaic, N. J.
Felt	Western Felt Works, Chicago
Formica	Formica Insulation Co., Cincinnati, Ohio
Welding rod	Lincoln Electric Co., Cleveland, Ohio Hollup Corp., Chicago
Air conditioning unit	Frigidaire Corp., Dayton, Ohio
Fans	American Blower Corp., Chicago Safety Car Heating & Lighting Co., New Haven, Conn.
Air filters	American Air Filter Co., Louisville, Ky.
Thermometers	Taylor Instrument Co., Rochester, N. Y.
Freon	Kinetic Chemicals, Inc., Wilmington, Del.
Flexible connectors, air	E. I. duPont de Nemours & Co., Wilmington, Del.
Steam heating equipment	Vapor Car Heating Co., Chicago
Registers	Hart & Cooley Mfg. Co., Chicago Tuttle & Bailey Mfg. Co., Brooklyn, N.Y.
Windshield wiper	National Windshield Wiper Co., Chicago
Headlight, marker lights, etc.	Pyle-National Co., Chicago
Tyfon horns	The Leslie Co., Lyndhurst, N. J.
Sash and glass	Pittsburgh Plate Glass Co., Pittsburgh
Window curtains	Pantasote Co., New York
Curtain fixtures	Railway Curtain Co., Chicago
Chair car seats	Coach & Car Equipment Co., Chicago
Lounge car chairs	S. Karpen & Bro., Inc., Chicago
Seat covering	L. C. Chase & Co., New York
Basket racks	Adams & Westlake, Elkhart, Ind.
Ash stands	Howell Co., St. Charles, Ill.
Radio and transformers	General Electric Supply Corp., Schenectady, N. Y.
Range	Stearnes Co., Chicago
Water filter and cooler	Tested Appliance Co., Chicago Henry Giessel Co., Chicago York Ice Machinery Corp., York, Pa.
Cup dispensers	Vortex Cup Co., Chicago
Lighting fixtures	Safety Car Heating & Lighting Co., New Haven, Conn.
Lamps	General Electric Co., Lamp Div., Cleveland, Ohio
Electric switches	Allen-Bradley Co., Milwaukee, Wis.
Wire	Kerite Insulated Wire & Cable Co., New York
Electric fittings	Graybar Electric Co., New York Pyle National Co., Chicago Westinghouse Electric Supply Co., Pittsburgh, Pa. Electric Service Supplies Co., Phila., Pa.
Flooring, cork	Armstrong Cork Co., Lancaster, Pa.
Linoleum	Congoleum Nairn, Inc., Kearney, N. J.
Carpet	The C. P. Cochrane Co., Chicago



Half Section of the Power Unit

Door holders	Stanley Works, New Britain, Conn.
Locks	Yale & Towne Mfg. Co., Stamford, Conn.
Receiver and water tanks	W. B. Scaife & Sons Co., Oakmont, Pa.
Pipe fittings	Parker Appliance Co., Cleveland, Ohio
Washstands and faucets	Crane Co., Chicago
Hoppers	Duner Co., Chicago
Hopper valves and soap dispensers	Imperial Brass Mfg. Co., Chicago
Hopper seats	C. F. Church Mfg. Co., Holyoke, Mass.
Towel cabinets	West Disinfecting Co., Long Island City, N. Y.
Paint, outside	Murphy Varnish Co., Newark, N. J.
Paint, inside	Sherwin-Williams Paint Co., Cleveland, Ohio
Fuel oil	Standard Oil Co. of Indiana, Chicago
Car oil	Texas Co., New York

and PCL control apparatus. This equipment is supplemented by a storage battery and an auxiliary battery-charging generator.

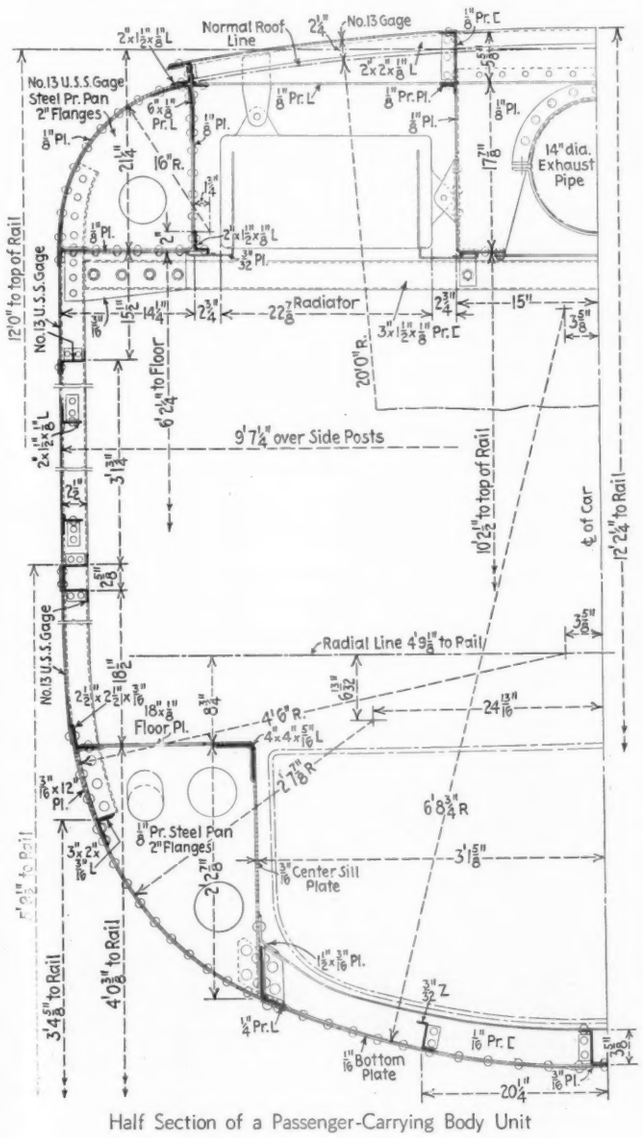
The generator is designed to provide a characteristic most suitable for this particular engine. There are four 300-hp. motors, carried on the first and second trucks. They are of the self-ventilated, heavy-duty railway type. Clean air is supplied to the motors from inside the car body through flexible air ducts supported between the motor and the car underframe.

A 32-cell MVAH 25-plate Exide Ironclad battery is furnished to supply power for engine starting, transmission control, cab and engine-room lights and emergency train lights. It has a capacity of 450 amp. hr. at the 10-hr. discharge rate.

The power-plant equipment includes a small 110-hp. oil-electric power plant which is provided to supply auxiliary power for the battery-charging and the train-line auxiliaries. This auxiliary unit consists of a four-cycle high-compression oil engine rigidly coupled to a 60-kw., 220-volt, 3-phase, a.c. generator. The driving engine is similar in design to the main engine and develops its rating at 1,200 r.p.m.

Mounted on the auxiliary generator end frame is a 7-kw., 76-volt, d.c. exciter which, in addition to its function of providing excitation for the generator, is used for battery charging. The a.c. power supply will furnish power for the train-line equipment, such as air-conditioning, radio, lighting, kitchen blower, steam-heating control and electric appliances in the kitchen.

The air compressor is a Gardner-Denver two-stage, water-cooled unit, equipped with inter-cooler between the low- and high-pressure pistons. It is mechanically driven from the main engine and has a displacement of 79.4 cu. ft. per min. at 750 r.p.m.



Half Section of a Passenger-Carrying Body Unit

Hearings Open on Proposal to Take Over M. & St. L.

HEARINGS on the proposal of the Associated Railways Company to take over the Minneapolis & St. Louis, as outlined in the *Railway Age* of September 14, 1935, page 337, were opened before C. E. Boles, assistant director of the Bureau of Finance of the Interstate Commerce Commission on April 6 at Minneapolis, Minn., where testimony was confined to the plan in general and its effect on public interest. At subsequent hearings testimony will be heard on the effect of abandonments on specific communities. Opposing the plan are state railroad commissions, chambers of commerce and the employees of the M. & St. L., who are conducting a campaign to raise a $50,000 defense fund.

At the opening of the hearing at Minneapolis, the Chicago Great Western, which heretofore has been one of the roads comprising Associated Railways, withdrew as one of the applicants and simultaneously asked permission to intervene in opposition. This action was taken because trustees for the Great Western "have come to the conclusion that the granting of the application would not be for the best interests of said estate."

In order that Charles E. Elmquist, counsel for state railroad commissions, communities and industries served by the M. & St. L., might move for a dismissal of the case before lengthy testimony had been taken, George W. Hand, president of Associated Railways, testified that this company had no assets, had never operated a railway, expected abandonments to be made before acquisition and that the purchase of the remaining lines depended upon a loan from the Reconstruction Finance Corporation. Mr. Elmquist challenged the jurisdiction of the commission over an application of a company to abandon lines which it did not own.

W. F. Peter, attorney for Associated Railways, in his opening statement said that the testimony to be presented by the applicants will lead to the conclusion that independent operation of the Minneapolis & St. Louis cannot continue and that the one alternative is the plan of Associated. The first witness in support of this premise was John W. Barriger III, chief examiner of the railroad division of the Reconstruction Finance Corporation, who analyzed a lengthy statistical exhibit on

(*Continued on page 626*)

Great Northern Combats Severe Slide Conditions

Extensive subsurface drainage systems and other corrective measures cure unstable roadbed at Pinnacle, Mont.

Construction View of an Intercepting Trench at Pinnacle

SLIDE control measures of an extensive and drastic nature have been applied by the Great Northern to severe slide conditions in the vicinity of Pinnacle, Mont., where the railroad's side-hill embankment suffered a severe "slip-out" in 1923 together with a gradual subsidence at other places in the same vicinity over a period of years. Following a comprehensive investigation of the underlying conditions in the slide territory, which revealed the existence of inclined strata of water-lubricated shale, the railroad applied remedial measures consisting principally of the installation of an elaborate system of subsurface drainage designed to intercept the flow of water along the surface of the shale. Additional measures included at one point the removal of the overburden and embankment down to the shale and the application of a layer of angular boulders, held in place by lines of scrap rails, anchored to the surface of the shale, before excavation was back-filled.

History of Line

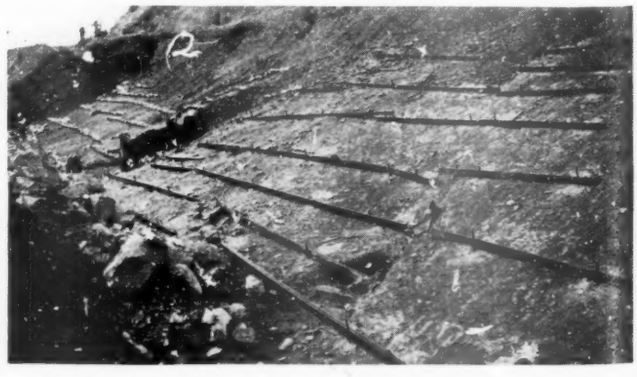
Pinnacle is situated on the west slope of the Rocky mountains on the main line of the Great Northern, the location of which was commenced in 1889 after the discovery of the Marias pass in December of that year by John F. Stevens had assured the railroad of a crossing of the mountains. While the construction of a single-track line over the mountains was completed within a few years, the efficient handling of the steadily increasing volume of traffic that the line was called upon to carry necessitated a systematic and progressive program of improvements involving the revision of grades and alinement and the construction of additional tracks.

In line with this program of improvements the company, on January 1, 1923, undertook the extension of the second track west from Java, Mont. (now Nimrod), to Nyack (now Red Eagle), a distance of about 20 miles. In the vicinity of Pinnacle, which is about midway between the two points named, the line is located on the west side of, and roughly parallel with, the Flathead river, the grade line being situated about 100 ft. above the river on a slope that extends about 400 ft. above the track to the top of a broad flat "table-land."

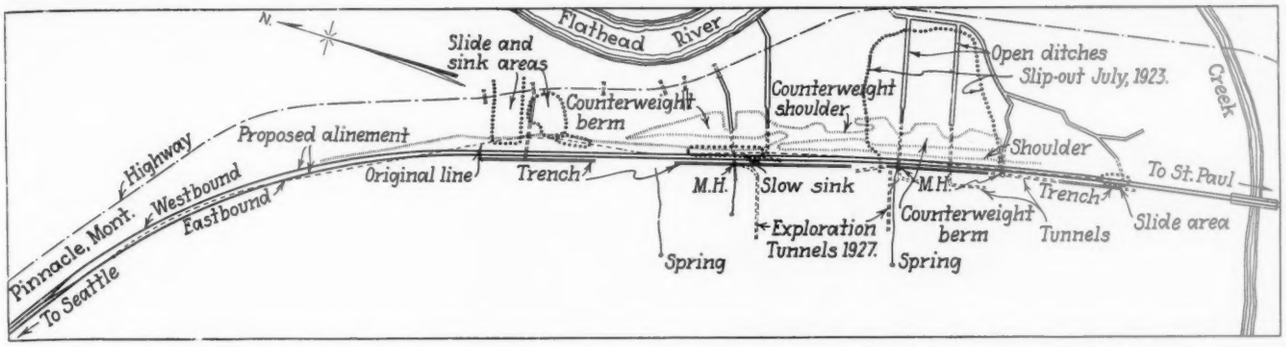
Trouble was first encountered on July 17, 1923, while grading operations for the second track were in progress, when the old embankment started to settle at a point about a mile east of Pinnacle. Two days later about 500 ft. of embankment in the same vicinity moved downhill in a "slip-out." Approximately 35,000 cu. yd. of material, including a considerable quantity of the natural ground, went out in the slide, some of which moved as much as 600 ft. from the center of the track. Pending further investigation of the side-hill conditions at this point the railroad constructed a single-track pile and frame-bent trestle across the slip-out, which was completed and traffic restored on July 22.

The difficulty with slides in this vicinity was not confined to the slip-out but included a 300-ft. section some distance north of the original slide where the embankment had been settling gradually over a period of years, still another section, 400 ft. long, some distance farther north where settlement and slides occurred from time to time, and a similar, although less extensive area, about 400 ft. south of the slip-out. While not of an emergency nature, the settlement occurring in these sections necessitated the frequent raising and surfacing of the track, with the result that excessive maintenance costs were being incurred.

In view of the generally unstable character of the hillside in this vicinity it was feared that a continuance



Lines of Scrap Rails Were Anchored to the Inclined Surface of the Shale at One Location



Location Plan Showing the Slide Areas at Pinnacle and Essential Features of the Drainage System That Was Installed

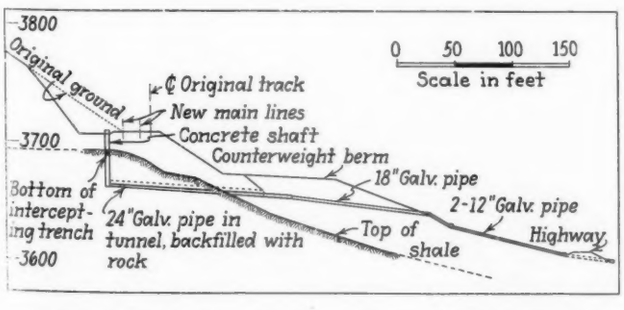
of the grading operations for the second track might lead to further disastrous slides. Therefore, pending the application of suitable corrective measures, the grading work was suspended throughout the unstable territory, a distance of about 3,000 ft., although elsewhere the construction of the second track was carried to completion, the traffic on this track being carried across the slide territory and the temporary trestle on a gauntlet track.

Preparatory to the design and installation of corrective measures, with the ultimate objective of completing the construction of the second track, a thorough investigation of the slide territory was undertaken with a view to determining the exact nature of the conditions that were contributing to the instability. These studies and investigations, which were carried on more or less continuously until 1927, included the taking of a large number of soundings and borings and the construction of a number of 4-ft. by 5-ft. exploration tunnels into the hillside.

Inclined Shale Formation Revealed

This survey disclosed the fact that the entire hillside was underlain by a laminated shale formation which sloped downward at an angle of 22 deg. with the horizontal from a point on the uphill side of the track about 15 ft. to 20 ft. below the track grade. Above this point the surface of the shale extended back into the hillside on approximately a level plane. The overburden consisted largely of partially cemented gravel. Thus it developed that the instability of the surface material could be attributed to the tendency of the overburden to move under load on the inclined surface of the shale which was being lubricated by the surface and subsurface water that percolated down through the gravel. The supply of water was amplified by the discharge from a number of springs on the hillside above the track.

It was concluded, therefore, that the added load imposed by the grading operations for the additional track, together with a possible disturbance of the surface and underground flow of water resulting from the same operations, had culminated in the slip-out. However, a contributing factor may have been the fact that heavier locomotives were placed in service over this district about the time that the slide occurred.



Typical Cross-Section at Pinnacle Illustrating How the Newly-Installed Drainage System Is Arranged to Intercept the Flow of Water Along the Surface of the Shale

Remedial Measures

After thorough consideration of all the factors involved and of various means of effecting a permanent stabilization of the slide territory, it was decided that a complete system of underground drainage, designed in such a manner as to intercept the flow of water through the gravel and along the surface of the shale before it reached the track, offered the best solution to the problem. Essentially, the plan of drainage that was adopted contemplated the installation of a system of tunnels and trenches for collecting the water and carrying it underneath the track to outlets on the downhill side. Authority for the installation of such a system in the vicinity of the slip-out, involving about 1,100 ft. of track, was granted in November, 1929, the work being commenced immediately and completed in the following year. In the remainder of the slide territory, however, the work of installing drainage systems was not commenced until the fall of 1933, being completed in 1934.

Coincident with the installation of the slide-control measures it was decided to effect a realinement of the track with the objective of reducing the curvature and at the same time of moving the track farther back into the hillside at several points where a greater degree of stability would be obtained. As a result of this change the original alinement through the slide zone, embracing five curves having a maximum curvature of eight degrees, was replaced with a line that has only two curves, the sharpest of which is two degrees. At the same time the grade was raised varying amounts at a number of points, the maximum raise being five feet.

The drainage system that was installed is composed of three separate and distinct parts as follows: One at the slip-out and the most southerly slide area, involving about 720 ft. of intercepting trench and about 460 ft. of tunnel for the same purpose; another at the slow sink just north of the slip-out, comprising about 750 ft. of trench; and the third at the most northerly scene of trouble where about 500 ft. of trench was installed.

Description of Drainage Systems

The intercepting trenches and tunnels were constructed generally parallel with, and at a distance of about 12 ft. from, the center line of the nearest track. The trenches were excavated down to and into the shale at least a foot, heavy sheeting and struts being installed to prevent caving while the work was in progress. In digging the trenches and tunnels, a number of localized dips were encountered in the surface of the shale and in order

to avoid the excessive and costly excavation of the shale that would have been required if the flow line had been lowered to the level of the depression, concrete inverts were constructed across the dips, with concrete walls extending down to the surface of the shale.

When the trenches and tunnels had been excavated to the desired depth there was inserted in each of them a line of 12-in. perforated corrugated galvanized pipe and two lines of 6-in. or 8-in. vitrified clay pipe, the latter with loose joints. The trenches and tunnels were then back-filled with specially selected boulders up to ½ cu. ft. in size. The timber shoring in the trenches and tunnels was not removed.

The drainage pipes discharge into out-let drains that are carried under the tracks in tunnels, access from the surface to the junction points of the intercepting drains and the out-fall drains being provided by means of vertical shafts composed of concrete pipe. From the out-let drains the water is discharged into open flumes and ditches on the downhill side of the roadbed. In the vicinity of the slip-out two out-let drains were provided,

View in One of the Intercepting Trenches Showing the Arrangement of the Pipes and the Type of Back-Filling Used

while in each of the other systems the trenches drain into only one outlet.

After the drainage system at the slip-out had been completed, the work of filling the temporary trestle was undertaken. Preparatory to this work and as an additional precaution against the movement of the embankment and the overburden, a counterweight berm was constructed on the downhill side of the track. When finished the top of this berm, about 30 ft. below subgrade, was 100 to 150 ft. wide. The trestle was then filled to grade and to a width sufficient to carry two tracks. Material for the counterweight berm and for filling the trestle was excavated from the hillside above the track, this excavation being in line with the plan to move the track farther into the hillside on an improved alinement and, at some points, off the sloped portion of the laminated shale.

Replacement of Overburden

Late in 1933, after authority had been obtained to install subsurface drainage systems in the two northerly slow-sink areas, wash borings were made to determine the depth to the surface of the shale. With respect to the unstable area next to the slip-out these investigations revealed that the cinders on which the track had been raised from time to time had penetrated over a considerable area to the surface of the shale or to a maximum depth of 23 ft. As the presence of the cinders was considered undesirable, it was decided that they should be removed and replaced with a more stable material. Accordingly, a "shoo-fly" was constructed around the area on the up-hill side and the undesirable material removed by dragline, the cinders being disposed of by casting them down the hillside beyond the limits of the proposed new embankment. In this manner an area of the shale 250 ft. long and 60 ft. wide was stripped of the overlying cinders and gravel, a total of 16,000 cu. yd. of material being removed.

The shale thus exposed was found to have a generally smooth and uniform surface which, when lubricated by water, afforded an insecure foundation for the support of a railroad embankment. Therefore, before restoring the embankment, it was decided that some means must be provided for treating the surface of the shale in such a manner as to prevent the back-fill from moving downhill. Past experience had demonstrated that it was not practicable to scarify the surface of the shale to prevent the slipping of the overburden; such treatment of the top layer or lamination causes it to break up so that another smooth surface is presented by the next layer.

As a solution to the problem thus presented a novel method was adopted of treating the surface of the shale. This treatment involved the laying of horizontal parallel lines of scrap rails against steel pins driven into the shale. The rails were laid on their sides with the heads up-hill so that the pressure of the overburden would cause the downward edge of the base of each rail to cut into the shale, thus presenting additional resistance to movement. A layer of rough angular boulders was then laid over the surface of the shale and the excavation back-filled. The work at this point also included the construction of a counterweight berm which was made continuous with that previously installed along the adjacent slip-out area.

While the installation of the drainage systems and the building of the double-track embankment have now been completed, the throwing of the existing track to the permanent alinement, the construction of the second track and the removal of the gauntlet track have been deferred until the new embankment has had time to become solidified.

This project was carried out under the direction of J. R. W. Davis, chief engineer, and F. Mears, assistant chief engineer, of the Great Northern. The Guthrie-McDougall Company, Portland, Ore., installed the drainage system at the slip-out, while the Morrison-Knudsen Company, Boise, Idaho, installed the system at the slow-sink areas.

EMPLOYEES OF THE NORFOLK & WESTERN and members of their families received a total of $688,146 last year in benefits from the rail workers' relief fund, according to the annual report of J. C. Snavely, superintendent of the N. & W. Relief and Pension department. Receipts of the fund for 1935 amounted to $958,106, an increase of $100,531 over the previous year. Of the total receipts, $663,829 was contributed by members of the fund, and the remainder represented interest on investments, interest allowed by the railroad on monthly balances in the hands of the treasurer, and profit from the sale of securities. On December 31, 1935, the fund had a balance of $3,197,054, an increase of $269,960 over the 1934 year-end balance. A total of $9,762,275 has been paid to employees and members of their families since July, 1917, when the fund was established.

Hearings on Wheeler—Crosser Bill

Testimony before sub-committee of House committee on interstate commerce concluded—Senate committee hearings next week

WASHINGTON, D. C.

HEARINGS before a sub-committee of the House committee on interstate commerce on the Wheeler-Crosser bill, proposed by the railroad labor organizations to impose new restrictions on reductions in railroad employment, were concluded on April 4 and arrangements were made for a further hearing before the Senate committee on interstate commerce next week. The final testimony before the House committee was given by George M. Harrison, chairman of the Railway Labor Executives' Association, in rebuttal of that given earlier in the week by a number of railroad executives. He had also testified at the opening of the hearing.

The issues before the committee were somewhat confused because Mr. Harrison discussed the bill as a plan for compensating employees that may be displaced in connection with consolidation or co-ordination projects, such as those recommended by Co-ordinator Eastman's organization, estimating that 150,000 men would be displaced if all of them were put into effect, while the railroad officers emphasized their concern over the provisions in the bill which would make it necessary for even a single railroad to obtain approval from the Interstate Commerce Commission before making any ordinary reduction in service or facilities, for seasonal or other reasons. Mr. Harrison said that it was not intended to restrict reductions because of fluctuations in business, although it was intended to apply to consolidations of shops or offices of single railroads. Testimony on behalf of the Association of American Railroads in opposition to the bill was concluded on April 1 with that of L. A. Downs, president of the Illinois Central; C. R. Gray, president of the Union Pacific, and R. V. Fletcher, general counsel of the association, who objected vigorously to the idea of substituting bureaucratic control for managerial discretion as to the number of employees. J. M. Hood, president of the American Short Line Railroad Association, also appeared in opposition to the bill, as did W. H. Day, representing organizations of shippers in New England, and C. R. Seal, representing the National Industrial Traffic League.

Testimony of George M. Harrison

Mr. Harrison's argument was that the provisions of the bill would not cost the railroads anything because the dismissal compensation would represent only a part of the economies expected to be realized from co-ordination or consolidation and he took the position that Congress has an obligation to provide for the protection of employees in such circumstances because it wrote a consolidation policy into the transportation act of 1920 and made provision for co-ordination economies in the emergency act of 1933. Under this law, he said, the co-ordinator and the railroads have worked out some 5,000 co-ordination or unification projects which he estimated would eliminate 150,000 jobs, and if these projects did not promise economies more than sufficient to cover the dismissal compensation he said they would not be adopted. In reply to criticisms because the labor organizations have sought to accomplish their object by legislation while still negotiating with the railroads for an agreement on the subject, he said the railroads were informed at the outset that a bill was being prepared for submission to Congress and that the managements have been given every opportunity to meet the problem through agreement.

"The witnesses who have appeared in opposition to this measure have endeavored through the widest application of the language of the bill to make it appear that the ordinary operations of the carriers to meet the usual fluctuations in business would be subject to the control of the Interstate Commerce Commission and it would divest railway managements of the last vestige of managerial authority in carrying on railway operations.

"I endeavored to point out to the committee that the bill was designed to protect the railway employees against the loss of employment when the carriers consolidated, merged or abandoned their facilities, or pooled their operations.

Labor's Interpretation of Bill

"It will be noted that the language specifically provides that when a carrier undertakes to consolidate or pool its facilities or traffic operations that those changes shall be subject to action by the I. C. C. and in accordance with the standards subsequently set up in section 7 of the bill and nowhere in this section 4 of the act are the carriers to seek authority from the I. C. C. to adjust their normal operations to meet the demands of the traffic. At the present time carriers cannot consolidate their properties, extend or abandon their lines without authority from the I. C. C. and many of the state commissions. In fact this requirement is specifically provided for in the transportation act of 1920 and all we have endeavored to do is to make the provisions of this bill, in respect to those matters consistent with the declared policy of the Congress as expressed in the transportation act. The provisions in section 4 which the carrier witnesses have used to support their argument that normal adjustments in forces could not be made to meet the requirements of the traffic read: 'Or reduce the amount of public service previously being performed by the carrier,' should be read in the light of what precedes this language in this section of the bill.

"What this means is that they shall not co-ordinate, merge or pool their lines or facilities if it will result in reducing the amount of transportation facilities available for the public, without the approval of the I. C. C. And then as further evidence of our intent, it would be well to consult section 5 of this bill; there it is made plain that no carrier shall consolidate facilities, establish joint trackage rights, pool traffic, abandon tracks or other facilities or any other such action without applying to the I. C. C. for authority. Certainly if a carrier reduces the length of a passenger train or withdraws the operation of a train because there is no longer demand by the public for that service, it could not be fairly said that Section 5 of the bill would prohibit that action because it does not represent a consolidation, pooling, abandonment of tracks or other facilities. Certainly when a carrier withdraws a passenger train because there is no traffic they do not abandon those facilities, they keep them on hand and in serviceable condition generally for future use when the

traffic is such that they are required. There is a vast difference between the adjustment of service to meet the public demand and the consolidation of the properties and abandonment of facilities.

"What we are endeavoring to do is to provide that when the carriers consolidate, merge, pool, co-ordinate or abandon their facilities that they shall share part of the economies obtained with the employee by affording protections which are described in section 9, paragraphs a, b, and c. Paragraph a of this section states that if it is necessary to reduce the number of employees and employment of a comparable nature under no less favorable conditions cannot be supplied, then the employee is to be paid two thirds of his usual compensation for such period that he is unemployed, or at the option of the employee he may take one full year's wages, surrender his right to again enter the service when he may be needed, or if he is advanced in age he may be retired on an adequate pension system under any applicable pension then in effect."

Railroads Should Have Chance to Rehabilitate

L. A. Downs, president of the Illinois Central, told the committee that the railroads should be given a chance to earn enough to rehabilitate and modernize their plant to the point where they can compete with other forms of transportation on fair terms. "The present bill tends to strangulation," he said. "It substitutes a bureaucracy where managerial discretion should control. It is an unreasonable and arbitrary invasion of the property rights of the railroad owners. It is of the nature of class legislation and it is an unwarranted interference with the rights of the railroad employers to make contracts of employment with their employees. This bill, if enacted, would react against the employees as well as the public in that it would inevitably result in managements refraining from engaging in any activity which would necessitate temporary increased forces because of the difficulty of reducing such forces when the cause for such temporary activity ceased.

"If the purpose is to destroy railroads, or to bring about receiverships or trusteeships of railroads, or government ownership of railroads, confessedly, the enactment of this bill is a step in that direction. If the general purpose of Congress at this time is to enact laws which will, in the long run, put business back on its feet, to enable employers to employ more men, to give more men employment, to do away with the necessity of the temporary aid by the government to unemployed men, then this bill should not be passed.

"There are certain managerial rights with which even the federal government can not interfere. In my judgment, this is one of them. The government certainly has no right to interfere with a proper discretion requiring business judgment, especially where by doing so faithful and efficient service will not be secured but the property will be damaged."

Mr. Downs said the primary duty which the railroads owe to the public is to furnish good service at reasonable rates, adding: "To accomplish this, it necessarily follows that when lack of business or competition makes unprofitable particular service, facilities or even portions of lines, such services, facilities or branch lines must be abandoned or consolidated with others. If this be not done, the railroad must bear the load, and in so doing must either lower the whole standard of service, increase the rates, or become bankrupt.

Good Service at Low Rates Demanded

"The public is asking for faster and cheaper passenger and freight service. Obviously, if the railroads are to enjoy maximum traffic and revenue and furnish maximum employment for a sustained period of time, they must be able to furnish good service at the lowest rate feasible."

This bill, Mr. Downs continued, goes much further than the labor provisions of the emergency transportation act and would require routine matters such as the withdrawal of and changes in trains and facilities at small stations which are of daily occurrence to be submitted for approval "through the ponderous machinery set up for the handling of what would otherwise be an ordinary managerial function of quick solution."

Would Require Augmented I.C.C. Forces

"Aside from interference with the managerial phase of the business of the railroad and the delay and cost to it of handling in this cumbersome fashion, the increase in the number of employees of the Interstate Commerce Commission would be great and the expense intolerable," he added. Mr. Downs also said that the bill "would produce undesirable controversies between municipalities and the railroads where the political factor would be predominant, and would result in long delays, if not the actual prevention of needed economies."

"From the standpoint of the employees themselves," he said, "it is decidedly to their advantage in the long run that the managers of the railroad property be not prohibited from taking all practical steps in a business-like way to effect economies in operation which will bring about a maximum efficiency of service at a reasonable charge.

"It is my considered opinion that if this proposed law be not imposed on the railroads of this country, more men will be given employment by railroads, both immediately and ultimately, than if this bill be passed. What I mean by that is that if the railroads are allowed, under their own management, to do what is necessary with their properties from day to day, seeking each day to take advantage of the improvement of business, and step by step to increase their activities and enlarge their revenues, this will not only bring about at this time the ability to take care of the men who are now in the employ of the railroads, but allow the railroads to increase that employment.

"Notwithstanding the introduction of all necessary economies, the Illinois Central in four of the last five years has operated at a deficit. If this bill had been a law during the past few years, the Illinois Central would have been in the hands of the courts. If the railroad industry is not strangulated by governmental interference and bureaucratic red tape, the future has unmeasured possibilities and I truly believe, if allowed to work out our own destiny, we will employ many more men than we now employ."

Mr. Downs cited many illustrations to show how this bill would adversely affect the Illinois Central not only in Chicago but elsewhere along its lines and interfere with the management of that road in meeting many local situations.

Not Proper Subject for Legislation

Carl R. Gray, President of the Union Pacific, told the committee that this is not a proper subject for legislation but is one which should be left to the formulation of an agreement between employees and managements.

"This bill," Mr. Gray said, "would make it impossible for a railroad to expand or contract its service as conditions required. It also would put an absolute embargo on experiment and progress in the railroad industry. The bill does not have the same reason back of it that

brought about restrictions on the railroad managements in respect to labor found in the emergency transportation act. It introduces into the railroad situation a new situation that is fixed and arbitrary. If enacted into law it would mean that no detail of management is left.

"The relationship between railroad management and their employees is not a proper subject for law. It removes the last vestige of initiative and enterprise on the part of management to meet situations and conditions constantly arising with the changing swings in traffic. There will be no flexibility left if this bill is enacted into law. We could not even make any change in our equipment or facilities, if those changes affected or disturbed the employees, without first getting permission from the Interstate Commerce Commission. We have not had any difficulty in meeting our own problems as they have arisen in the past through our system of working with the men. We have been most successful but under this bill we could no longer negotiate with them." Mr. Gray said that the bill seeks to "freeze employment" on the railroads and if enacted into law will have repercussions beyond anything that can now be foreseen.

U. P. Agreement Was Mutually Satisfactory

Mr. Gray referred to an agreement which became effective on January 1, 1936, between the management of the Union Pacific and certain employees in accounting departments affected by the consolidation of various subsidiaries. This agreement was mutually satisfactory to both sides, according to Mr. Gray, who added: "That is the way those things should be done and not by law. It illustrates what can be done by collective bargaining between men and managements."

Mr. Gray also said that the Union Pacific last year abandoned, with the consent of the Interstate Commerce Commission, 190 miles of railroad in the heart of the agricultural region of Kansas but that his company was able to take care of the employees affected by that abandonment.

Why Single Out Railroads?

R. V. Fletcher, general counsel of the Association of American Railroads, said in part:

"Why the railroads should be singled out for legislation of this kind is beyond my reasoning. I do not know why the highway operators should not be included as well as the water lines. Certainly there is no legitimate reason why these other transportation agencies should not be made subject to the provisions of this law if it is to be invoked against the railroads. In the enactment of this bill you are handicapping and straightjacketing the railroads and not placing any such restrictions on their competitors. Why strike at the railroads supposedly in the interest of the public when you are not disturbing others who likewise provide a public service?

"If you enact this law stating that the number of railroad employees cannot be reduced you might as well be consistent and enact legislation then which would prohibit the discharge of government employees whether they are needed or not."

"The railroads have been charged, among other things, by the proponents of this bill, with paying dividends to their stockholders when they should have been using such disbursements in retiring bonds or building up reserves to take care of unemployment. The proponents have stated that the railroads have been overbuilt; that lines have been constructed without regard to public interest. If it is true then that the railroads have been overbuilt and they have facilities now that are not required through changing conditions what becomes of that theory that they should not correct it? The money that has been spent in recent years has resulted in increased efficiency and economies in railroad operations. Under this proposed law, our hands would be tied insofar as making any further moves with regard to new facilities or dismantling old equipment."

Eastman Recommends Unemployment Compensation

WASHINGTON, D. C.

A PLAN of unemployment compensation for all transportation employees, not limited to railroad employees, to take the place of the unemployment compensation provisions of the present social security act without additional expense, is recommended by Co-ordinator Eastman in a report to the President and Congress, accompanied by a draft of a bill, which was made public by the Interstate Commerce Commission on April 7. In transmitting the report the commission said it was no doubt highly desirable that early consideration be given to bringing the present system under one authority and to putting it on a uniform basis but that since the subject is not within the scope of its functions it was making no recommendations. The cost is estimated at 3 per cent of the gross payroll. Corresponding costs of other scales of benefits, together with a detailed analysis of cost factors and methods of computing costs, are shown in an appendix.

The report was prepared by the co-ordinator's Section of Labor Relations, Otto S. Beyer, director, with help from experts of the Social Security Board and the Railroad Retirement Board. In transmitting it Mr. Eastman said:

"I recommend the enactment of the bill submitted in Appendix I of the report and which is entitled "An Act to Establish a System of Unemployment Compensation for Transportation Employees, and for other Purposes." This bill may be regarded as a sequel to the Social Security Act. That act enables the states to set up systems of unemployment compensation without fear that the employers affected will be unfairly burdened in interstate competition. In the case of transportation employees there are excellent reasons, fully stated in the accompanying report, why the system of unemployment compensation should be set up by the federal government rather than by the states, and the bill in Appendix I provides such a system. It should be understood that this bill will not add to the financial burdens of the transportation companies now subject to the Social Security Act. All that it does is to provide a means whereby unemployment compensation for the employees of this national industry can be administered uniformly and efficiently on a national basis."

Outline of Plan

An outline of the plan is given in a memorandum from Mr. Beyer to Mr. Eastman as follows:

It is obvious that no industry which requires a large number of stand-by employees can adequately solve its own unemployment problem by providing continuous employment. Operations may be stabilized to the limit of practicability, but the need to supplement the income of irregularly employed workers will remain. The business of transportation is such an industry. It requires many more employees than can be given steady employment throughout the year. It is estimated that in the railroad industry during the 10 years from 1924 through 1933 about 30

cut of every 100 employees became unemployed during each year. Of these 30 unemployed workers from 20 to 25, on the average, were unemployed for more or less temporary periods while only 5 to 10 became permanently separated from railroad service. This same situation exists to a greater or less extent in other branches of the transportation industry.

Unemployment Benefits a Step in Right Direction

The suffering which unemployment entails has been too close to almost every individual during the last five years to require additional emphasis. Of the many remedial measures that have been proposed the payment of unemployment benefits has emerged as one of the most promising means of dealing with this problem. It does not attempt to give complete security against unemployment. It represents, rather, a step in the right direction.

Nine states and the District of Columbia have enacted unemployment insurance laws which include within their coverage many classes of transportation employees. As a result of the passage of the social security act it can be expected that many more such laws will be enacted within the next few years. Already state administrators of these laws are faced with the problem of providing equitable treatment for the employees of railroads, bus and truck lines, waterways and other interstate carriers whose operations are conducted with little regard for the interference of state boundary lines. Carrier officials must find a way under the present set-up to segregate employees, payrolls and employment, and account separately under each state law for these employees and the employment which each state may claim.

Under the social security act employers engaged in interstate transportation, with a few exceptions both as regards the carriers themselves and their employees, must pay a tax to the federal government on their payrolls which will eventually reach 3 percent and against which they can credit their contributions to state unemployment funds up to an amount equal to 90 percent of the tax. It does not matter that a given state has not enacted an unemployment compensation law. The tax must be paid, either directly to the federal government or divided between the federal government and state funds. In states which have no unemployment compensation laws the tax will be collected but no employees in those states will receive any benefits for unemployment.

Foreseeing the confusion which would follow the enactment of a great number of state laws, many of which will affect a single carrier, you recommended in your report of January, 1935, that transportation companies and their employees be included within a national unemployment compensation plan. With such a federal system as its objective, the Section of Labor Relations has drafted such a plan. The present report deals with the principal features of this proposed federal act and with a cost estimate which indicates that the cost of the recommended schedule of benefits will not exceed 3 percent of payroll.

It should be emphasized that this plan does not place any additional burden upon those employers whose payrolls are taxed by Title IX of the social security act. The tax in Title IX will protect industry from the competitive handicaps that would otherwise result from the enactment of state unemployment compensation laws. The plan here proposed goes one step further and frees both the states and the transportation industry from the administrative complications that are bound to follow the attempt to apply state laws to a national industry whose services are primarily interstate in character.

Recommend Law an "Interesting Departure"

The law recommended in this report constitutes a new and interesting departure from most unemployment compensation plans that have been enacted or are being considered in this country. Instead of basing the amount and duration of benefits on time losses, the proposed act bases unemployment benefits solely on wage losses suffered because of unemployment. These wage losses are determined for an individual employee by comparison with his monthly earnings during the year previous to the time of unemployment. By this means the necessity for a complicated set of records of full time hours of work, actual hours of work, and rates of pay is completely eliminated. The only basic record that will be required to determine the amount and duration of benefits under this plan will be a record of employees' monthly and half-monthly earnings. Most interstate carriers keep their payroll reports in such form that even this will require little departure from the accounting and record-keeping practices already followed. The difficulty of establishing benefits for partial unemployment particularly for piece workers and such transportation employees as are paid on a mileage basis, is also enormously simplified by this plan. It thus attacks a problem which is exceedingly difficult of satisfactory solution under ordinary unemployment compensation plans.

The unemployment compensation laws already in effect in this country will pay benefits at a rate of 50 percent of earnings (usually full-time earnings) up to a given maximum and continue these payments for a stated number of weeks. The proposed federal act for transportation employees, based as it is upon wage losses rather than time losses, will pay benefits on a half-monthly basis, equal to five-eighths of the amount by which the loss of earnings of an individual because of unemployment exceeds 10 percent of his average monthly earnings this means in effect that a part-time worker can receive benefits only when his earnings from work fall below 80 percent of his average earnings and that a totally unemployed worker will receive benefits equal to 50 percent of his average earnings. The same formula thus determines benefits for both total and partial unemployment and avoids the necessity of making a complicated and frequently inequitable distinction between them.

Benefit payments will be continued to an eligible employee until an amount is drawn equal to one-twelfth of total earnings in the previous two years. Since earnings in excess of $150 per month are not counted either in the determination of monthly earnings or total earnings, benefits cannot exceed $37.50 per half-month and $300 in one benfit year. The maximum duration of benefits for total unemployment will extend over about 4 months. Monthly earnings are determined by averaging the earnings of an employee in 4 months, using the one month in which monthly earnings were highest in each of the four quarters of the previous year. Provision is also made for minimum benefits.

Administration of the payment of claims and review procedure is placed in the hands of a Division of Transportation Unemployment Compensation created by the law and made responsible to the Social Security Board. Employers and employees, through representatives organized in an advisory board, are enabled to cooperate with the division and the board in furthering the purposes of the act.

In addition to the bill and a discussion of its major provisions, the report includes a careful estimate of the costs of paying unemployment benefits to transportation employees. This estimate is based upon comprehensive data secured largely from the railroad industry, but it is believed that it affords a reasonably accurate gage of costs for the transportation industry as a whole.

Last November the report and the draft bill which accompanies it were submitted in preliminary form to the representatives of the organized groups of transportation employers and employees affected by the proposed legislation. Both helpful criticism and many good suggestions were received, and both the bill and the report have been altered in many instances in consequence. The Section of Labor Relations has greatly appreciated the assistance which the representatives of the carriers and their employees, through their organizations, have given. In this connection it was understood that the organizations so consulted are not to be considered as endorsing or accepting the recommendations which the report contains.

This report, including the bill, is based on the research, statistical and related work of Dr. Edwin M. Fitch and Charles Bragman, of the Section of Labor Relations, and Joseph B. Glenn, of the Railroad Retirement Board. Information on employment in the motor vehicle, marine and other transportation industries was prepared by E. T. Paxton. The basic data employed in the statistical and actuarial analyses were obtained from a survey of employment histories of railroad employees made by the Section of Labor Relations under the direction of Murray W. Latimer, now chairman of the Railroad Retirement Board.

Chairman Mahaffie's Message

In transmitting the report Charles D. Mahaffie, chairman of the Interstate Commerce Commission, said:

The scope of the proposed act is practically unlimited and its importance is tremendous. It applies to common carriers by railroad, express company, sleeping car company, or by pipe line

subject to the interstate commerce act, also to any common carrier or contract carrier engaged in the transportation of passengers or property by water in interstate or foreign commerce, common carriers or contract carriers by motor vehicle subject to the interstate commerce act, part II, common carriers or contract carriers by aircraft engaged in the transportation of passengers or property in interstate or foreign commerce, and to any company which contracts for the transportation of property in interstate or foreign commerce whether by rail, express, motor vehicle, water, aircraft or otherwise.

Employees Affected by Proposed Bill

All employees in the transportation industry, estimated to number 1,564,100, with an estimated annual compensation of $2,244,249,000, will be directly affected by the proposed bill, and it will indirectly affect every citizen of the United States.

We agree that any system of unemployment compensation for persons engaged in interstate transportation should be set up and administered by the federal government rather than by the states, and it is no doubt highly desirable that early consideration be given to bringing the present system as to such persons under one authority and to putting it on a uniform basis.

The subject matter of the proposed bill does not come within the scope of any functions which the Congress hitherto has entrusted to us; therefore, we do not have in our records information upon which we can intelligently base recommendations. Because of the importance and scope of the subject we do not feel that we ought to attempt to submit definite recommendations without wide and careful study, including public hearings at which parties interested could appear and testify under oath with the privilege of cross-examination. To make any adequate investigation of a subject so complicated would result in undue delay in transmitting this report. We, therefore, transmit it without recommendations.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended March 28 totaled 600,487 cars, an increase of 33,679 cars as compared with the week before but a decrease of 16,033 cars, or 2.6 per cent, as compared with corresponding week of last year. The decrease under last year's figures is ascribed in part to flood conditions in eastern territory and to the reduction in coal movement. Coal loading was 44,118 cars less than in the corresponding week of last year. L.c.l. merchandise also showed a decrease but other commodity classifications showed increases as compared with last year. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading
For Week Ended Saturday, March 28

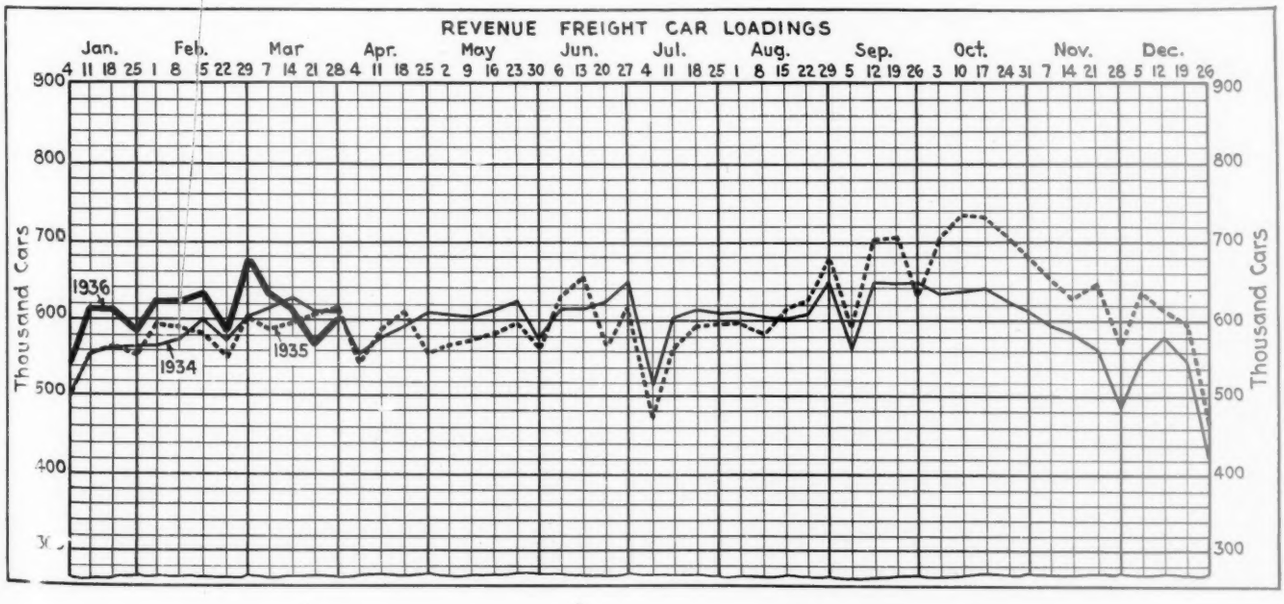
Districts	1936	1935	1934
Eastern	135,192	140,812	143,887
Allegheny	118,357	129,933	124,360
Pocahontas	40,444	47,903	48,134
Southern	93,382	98,899	95,869
Northwestern	71,905	66,339	67,480
Central Western	89,967	85,287	82,385
Southwestern	51,240	47,347	48,075
Total Western Districts	213,112	198,973	197,940
Total All Roads	600,487	616,520	610,190
Commodities			
Grain and Grain Products	29,676	26,981	27,523
Live Stock	12,200	11,029	13,544
Coal	96,679	140,797	140,071
Coke	6,123	5,179	7,867
Forest Products	29,947	24,806	23,781
Ore	4,744	4,151	4,199
Merchandise L.C.L.	157,162	160,909	166,170
Miscellaneous	263,956	242,668	227,035
March 28	600,487	616,520	610,190
March 21	566,808	607,178	610,036
March 14	616,862	597,431	627,549
March 7	634,828	587,190	614,120
February 29	673,123	604,331	605,717
Cumulative Total, 13 Weeks	7,907,214	7,504,918	7,565,168

The freight car surplus for the first half of March averaged 193,337 cars, an increase of 22,717 cars as compared with the number for the last part of February. The total included 102,245 box cars, 47,427 coal cars, 25,705 stock cars, and 7,387 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended March 28 totaled 44,049 as against 43,019 for the corresponding week in 1935 and 44,059 cars for the previous week, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
March 28, 1936	44,049	25,303
March 21, 1936	44,059	22,263
March 14, 1936	43,823	23,469
March 30, 1935	43,019	23,420
Cumulative Totals for Canada:		
March 28, 1936	544,258	295,533
March 30, 1935	555,149	295,639
March 31, 1934	530,152	298,554



M. & St. L. Hearings

(*Continued from page 617*)

finances and operation. Because of its thin traffic density, probably the thinnest in the United States, he said, the M. & St. L. has had to "eat itself up" to the extent of using, to pay operating expenses and taxes, much revenue needed to "keep the property alive," by adequate maintenance of tracks, cars, bridges, locomotives and buildings. The diversion of more operating revenue to interest and principal on the $4,000,000 which the railroad sought to borrow from the Reconstruction Finance Corporation two years ago and which loan the R.F.C. refused because of inadequate security and because it did not feel the railroad could repay the loan, would hasten the time when the road would be compelled to make wholesale abandonments of tracks that it could not maintain for fast or safe train operation.

To demonstrate how investment was being used to meet operating costs, he showed that investment in road and equipment was reduced from $62,366,028 in 1923, the first year of the 12½ years of receivership, to $60,657,275 in 1934. The $1,708,753 difference was cash realized from retirements. The difficulties under which the road has been operated were further shown in its cash balances which amounted to $1,519,206 in 1929, $281,462 in 1932, and $435,000 in 1935. During this 12½ years, the receivers were able to show a net credit on earnings of only $130,000 a year from operations on $53,000,000 invested in the road. The value of the road, as measured by the 1936 market price of its securities, he said, was $5,619,328, based on the highest amount at which they sold, and $3,714,163 based on the lowest, or 7.9 per cent and 5.2 per cent of the principal. The maximum cost to Associated under the plan would be $7,200,000, plus whatever sum may be required to discharge existing trust certificates of the railroad and its receivers.

To show the amount of undermaintenance that has accrued, he analyzed rail, bridge, locomotive and car installations.

The Wabash asked to intervene to protect the Wabash-M. & St. L. through line of connecting railways between Minneapolis & St. Louis, Mo., and Kansas City, via the junction at Albia, Ia. It averred that it is in public interest to continue these routes and the joint rates which are in effect. It asked that the routes and rates be maintained under Associated's plan.

Cross-examination of Mr. Barriger attempted to show that the R. F. C. was the author of the dismemberment plan, but Mr. Barriger contended that the plan was an outgrowth of conversations he had had with the presidents and officers of the lines comprising Associated. When questioned as to the starvation of the M. & St. L., he said that in his opinion abandonments which will occur if the railroad should continue as a system will shrink it to about one-third of its present mileage or to the Peoria-Mineapolis line with one or two branches. These, he continued, if operated under the severest type of management, might show sufficient earning power to justify a loan.

A major portion of the cross-examination was an attack upon Mr. Barriger's exhibits and interpretations, especially statistics on equipment and track maintenance and the decline in revenues, as compared with other railroads. In discussing track maintenance expenditures, he contended that traffic density was not an important factor in his exhibits, for damage by the elements is two-thirds of the total damage until density exceeds 10,000,000 ton-miles per mile per year.

Odds and Ends . . .

Chicken Business

Sergeant Robert C. Hurlburt of the police department of the Erie claims to be the only railroader in the country who has won prizes at eight national poultry shows. He specializes in Silver Wyandottes.

Royal Tradition Shattered

When King Edward VIII of England went from London to Glasgow recently to inspect the new liner "Queen Mary," he used a private car attached to a regular train. This marked the first time in history that a British monarch has ever traveled by rail except by special train.

A New Maintenance Problem

Railway workers were repairing the track near Kazanzevo station, on the eastern section of the North Manchurian Railway, when they were attacked by 12 brown bears. Soldiers guarding the party opened fire and forced the bears to retreat, leaving one of their number killed and two seriously wounded.

Reverend Railroader

Rev. G. W. Robbins is section foreman for the Louisville & Nashville at Miracle, Ky., and he is also an active Baptist minister at that point. A recent illustration in the L. & N. magazine proves this by showing the Reverend Mr. Robbins in mid-stream with ten of his flock.

Railroad Lodge

Albert Pike Lodge No. 219, A. F. and A. M., of Kansas City, seems to be a railway controlled lodge. At a recent installation of officers, Carl Soderstrom was made worshipful master; Roy Sharples, senior warden; William Cooke, junior warden; and G. O. Wilson, junior deacon. All four are employed in the accounting department of the Kansas City Southern.

Early Electric Lighting

The London Times claims that the Gare du Nord, in Paris, was the first railway station to be electrically lighted and St. Enoch's, Glasgow, Scotland, the second. The French station was equipped with electric lights in 1875, and the Scottish one about a year later. Can any of our readers claim an earlier record for any station in this country?

Holes in One

The recent remark in this column that we knew of no railroad golfers who had made holes-in-one in 1935 brought instant response, and, moreover, in both cases, ample proof was attached. S. A. Dobbs, executive general agent for the Gulf, Mobile & Northern at New Orleans, walked up to the 15th tee at the New Orleans Country Club on August 3, 1935, and, with one mighty stroke, sank the little white pellet in the cup, 184 yards away. W. B. Henley, traveling mechanical inspector of the Illinois Central, celebrated July 4 last year by sinking his tee shot at the 14th hole, 165 yards, of the Oak Hills course at Chicago.

Caboose Deluxe

There's a story behind the little red caboose in the yard of former Sheriff Shields of Great Falls, Mont. Its days of wandering are over but, unlike the dismal end of most railroad cars, this one is still on its own wheels and they rest on real rails and ties. The former sheriff happens to be one of the old-time railroaders of the Northwest. But now he's retired. The caboose, however, is not merely a reminder of his period of service for the Great Northern. This caboose, in fact, has gone quite high hat. Its interior has new and strange things mingled with the equipment customarily found in rolling stock of this kind. It's ex-sheriff and ex-conductor Shields' improvement on the fad of turning the basement coal bin into a recreational room.

Communications and Books . . .

The Railway Age cannot publish letters from readers who do not supply their names and addresses. Names of correspondents are not published, or disclosed even upon inquiry, unless the correspondent consents. But they must be given us as an evidence of good faith.

Merit Should Be Recognized

BALTIMORE, MD.

TO THE EDITOR:

For some time past I have been reading with much interest the various letters published in your columns. I found one, by W. F. Saunders (March 21, 1936, page 510), of special interest.

The rule of seniority to which he refers is no bar to the railroads recognizing ability or rewarding good service, because there are many "excepted" positions or "personal appointments" which do not come within the scope of the regulations. It does seem that unless a man has influence, regardless of effort or ability, he is not able to merit anything but a mediocre position. He is in a rut. I say "rut," because ahead of him is the man to whom Mr. Saunders refers—self-satisfied, protected by seniority rulings—who will not quit. This man does just sufficient work so as not to be removed. He is in good health, does not worry and, hence, does not conveniently die so as to make a vacancy for the under chap.

The railroads could, if they so desired, take the fellow who has their interests at heart, place him in one of the "excepted" positions and let him show his mettle. Unfortunately these jobs go to the favored "sons," and hence the ambitions and morale of the deserving man are stultified.

Once in a while a worker does attract the attention of a real official and a promotion results. These cases are so few, however, that they are the exception rather than the rule. If the railroad officials would go to some large terminal, freight or passenger, they would find men who have been faithful, have studied at their own expense and who would really benefit the service if promoted. Such promotions would show the rank-and-file of railroad workers that merit was being recognized and it goes without question that the general morale of the employees would be improved.

I should like to hear the sentiments of other "little" fellows on this question. Perchance some broad-minded official might see this article and try an experiment along the lines that I have suggested.

RAILWAY MAN.

"Dim Religious Light"

BERKELEY, CAL.

TO THE EDITOR:

I have recently returned from a trip across the continent, during which I rode on 17 main line railroads. It was my first long railroad journey in several years and I was eager to experience the recent improvements with which, I had heard, the railroads have been trying to win back passenger traffic from bus lines, airplanes and private automobiles. I found some, such as air conditioning, faster schedules, and abolition of most extra fares, and I appreciated them.

I was much less enthusiastic about the combination lounge and dining cars which were so plentiful east of Salt Lake City, since this type of car can serve only half as many people at a time as a regular dining car and can seat only half as many as a regular lounge car. In a number of cases, it has replaced the observation car, yet the passengers are deprived of the observation feature because the car is not placed at the rear of the train.

I was impressed most unfavorably of all by another thing which I found in almost every lounge, club or observation car I rode in. After dark, when I could not view the landscape, I wanted to read, but had to give it up out of regard for my eyesight. The lamps were placed too high or spaced too far apart, or both; here and there I found an isolated lamp in a good position, but with a shade that kept the light from covering my book, and more than once with nothing stronger than a 15-watt bulb, which is grossly inadequate by scientific test.

On the train it is especially important to have a good light in order to counteract the strain imposed on the eyes by the motion of the car. Yet on my whole trip I saw only two lounge cars in which the light was fit to read by. One was on an electric interurban line at St. Louis, and the other was an observation car, plainly not of the newest construction, on the Southern Pacific. In some cases, the writing desks had no lamps whatever, and even on one highly advertised train these desks were the only places where one could read without severe eye strain.

I think passengers would rather have a row of ordinary bulbs, powerful enough and close enough together to give proper illumination, than any kind of fancy lamp decorations or indirect lighting that does not fulfill its real purpose. After all, lounge cars are not churches, and a "dim religious light" is out of place in them.

CLIFFORD H. BISSELL.

New Books

Horsepower of Locomotives—Its Calculation and Measurement. By E. L. Diamond. Published by the Railway Gazette, 33 Tothill St., Westminister, S.W. 1, London, England. 24 pages, 9 in. by 12 in.; paper binding. Price 2s. 6d.

This pamphlet is a reprint of a series of seven articles which appeared in the Railway Gazette in 1935. Starting with the early tests and deductions made by D. K. Clark, the author then takes up the work done by Prof. Goss, Von Borries and various investigators in America, England, Germany, France and other European countries. As test plant and road test data are the bases of our knowledge of locomotive horsepower—indicated, at rim of drivers and drawbar—consideration is given to such tests as those made by the Pennsylvania Railroad and by other roads in Europe. In fact, the entire subject of locomotive testing is reviewed, although somewhat briefly. The important formulas proposed by Cole and others are given, including the more recent formulas of Kiesel and Lipetz.

Pioneer Pathways to the Pacific, by William Lee Park. 284 pages, 7⅞ in. by 5⅛ in. Illustrated. Bound in cloth. Published by M. A. Donohue & Company, Chicago. Price $3.50.

Mr. Park, who is a retired vice-president of the Illinois Central, is especially well-qualified to develop new side-lights in telling the oft-repeated but ever-fascinating story of the first Pacific railroad and the building of the West. For many years he was in continuous personal contact with the western railroads as a youthful observer of their building and operation, as an employee and as an officer. Before becoming associated with the Illinois Central Mr. Park, after growing up in Union Pacific territory, had served that road successively as messenger boy, brakeman, conductor, division superintendent and general superintendent.

It is this adequate background of well-rounded experience that enables the author to weave into his story many interesting anecdotes of his boyhood on the plains, of Indians and their hostility toward the railroad and of his personal contacts with various Union Pacific chief executives. The book opens with chapters on the pre-railroad era in the West—brief accounts of French voyageurs, Western migration and the Indians—before proceeding to develop the history of the Union Pacific from the time of the agitation for a Pacific railroad down through the Harriman regime. In discussions of the road's financial and traffic problems are included in turn an extended explanation of the Credit Mobilier case and an interesting account of the beginnings of the movement of perishables from the West.

In distributing laurels for accomplishment Mr. Park reserves a special place for the men "who severed their home ties, casting their lot with the new venture," pointing out that great credit has oftentimes been given "to promoters, politicians, financiers and stock gamblers who scarcely, if ever, saw the railroad, and if so, from the cushioned end of a private car."

NEWS

Net of $69,359,466 Reported for Two Months

Return of 2.33 per cent compares with $48,236,651 or 1.61 per cent in 1935

Class I railroads for the first two months of 1936 had a net railway operating income of $69,359,466, which was at the annual rate of return of 2.33 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics of the Association of American Railroads. In the first two months of 1935, their net railway operating income was $48,236,651 or 1.61 per cent. Operating revenues for the first two months totaled $599,557,505, compared with $519,241 compared with $199,585,654 in the same month in 1935, or an increase of 18.2 per cent.

Class I railroads in the eastern district for the first two months in 1936 had a net railway operating income of $52,078,867, at a rate of 3.70 per cent. For the same period in 1935, their net was $41,931,778 or 2.97 per cent. Operating revenues in the eastern district for two months totaled $316,676,398, an increase of 14.3 per cent, compared with 1935, while operating expenses totaled $234,063,507, an increase of 13.6 per cent. Class I railroads in the eastern district for February had a net of $27,349,308, compared with $21,938,996 in February, 1935.

Class I railroads in the southern district for two months had a net of $10,035,380, at the rate of 1.97 per cent. For the same period in 1935, their net amounted to $6,126,933 for the same period in 1935, an increase of 15.5 per cent. Operating expenses amounted to $467,684,885, compared with $411,995,188 for the same period in 1935, an increase of 13.5 per cent.

CLASS I RAILROADS—UNITED STATES

Month of February

	1936	1935	Per Cent of Increase
Total operating revenues	$300,458,829	$254,927,606	17.9
Total operating expenses	235,906,241	199,585,654	18.2
Taxes	21,271,131	19,779,003	7.5
Net railway operating income	33,594,718	26,296,411	27.8
Operating ratio—per cent	78.52	78.29	...
Rate of return on property investment—per cent	2.14	1.67	...
Two months ended February 29			
Total operating revenues	$599,557,505	$519,126,933	15.5
Total operating expenses	467,684,885	411,995,188	13.5
Taxes	42,800,432	39,636,671	8.0
Net railway operating income	69,359,466	48,236,651	43.8
Operating ratio—per cent	78.01	79.36	...
Rate of return on property investment—per cent	2.33	1.61	...

Class I railroads in the first two months of 1936 paid $42,800,432 in taxes compared with $39,636,671 in the same period in 1935 or an increase of eight per cent. For February alone, the tax bill amounted to $21,271,131, an increase of $1,492,128 or 7.5 per cent above the same month in 1935.

Thirty-eight Class I railroads failed to earn expenses and taxes in the first two months of 1936, of which 8 were in the eastern district, 8 in the southern and 22 in the western.

Class I railroads for February alone had a net railway operating income of $33,594,718, at the rate of 2.14 per cent. In February, 1935, their net was $26,296,411, or 1.67 per cent. Operating revenues for February amounted to $300,458,829, compared with $254,927,606 in February, 1935, an increase of 17.9 per cent. Operating expenses in February totaled $235,906,637,556, at the rate of 1.29 per cent. Operating revenues in the southern district for two months amounted to $78,900,472, an increase of 15.8 per cent compared with the same period in 1935, while operating expenses totaled $61,289,319, an increase of 11.3 per cent. Class I railroads in the southern district for February had a net of $5,322,732, compared with $3,881,475 in February, 1935.

Class I railroads in the western district for two months in 1936 had a net of $7,245,219, at the rate of 0.68 per cent. For the same two months in 1935, the railroads in that district had an operating deficit of $332,683. Operating revenues in the western district for the first two months' period in 1936 amounted to $203,980,635, an increase of 17.3 per cent above the same period in 1935, while operating expenses totaled $172,332,059, an increase of 14.2 per cent compared with the same period in 1935. For February alone, the railroads in the western district reported a net railway operating income of $922,678 compared with $475,940 for the same roads in February, 1935.

Coach Fare of 2.5 Cents Asked by Eastern Lines

Principal roads, except B. & O. and affiliates seek postponement and modification of order

Postponement and modification of the Interstate Commerce Commission's passenger fare reduction order to authorize them to experiment for 18 months with a coach fare of 2.5 cents a mile is asked in a petition filed with the commission on April 4 by the principal eastern railroads other than the Baltimore & Ohio and its affiliations. An exception was proposed for the Long Island, which asked for a coach fare of 3 cents a mile. The Baltimore & Ohio, Central of New Jersey, Reading, and Western Maryland did not join in the petition and had announced their intention of being prepared to comply with the commission's order, effective on June 2.

The petitioning railroads reasserted their belief that the commission was wrong in its assumption that such a drastic reduction in fares as that ordered would produce increased revenue and gave an estimate that it would cause a loss in revenues of over $27,000,000 for the New Haven, New York Central, Pennsylvania, and Long Island. They also criticized it as representing an unwarranted interference with managerial discretion. However, to avoid litigation, the roads expressed a willingness to put into effect the rate of 3 cents a mile in parlor and sleeping cars while objecting to a coach fare as low as 2 cents on the ground that this would create too great a spread between the two classes of service and tend to attract passengers from the Pullman service to the coaches.

The estimate of revenue loss, based on the year 1934, included $4,223,378 for the New Haven, $9,193,115 for the New York Central, $12,324,200 for the Pennsylvania, and $1,715,700 for the Long Island, and these estimates were said to be conservative because they did not take into account the undoubted diversion of passengers from Pullmans to coaches, nor the fact that a large part of the traffic of the New York Central, in particular, would not be able to obtain the full rates because of the longer distance of its route than that of the rate-making routes of its competitors. The petition also repeated contentions made by these railroads at the hearings and argument that preceded the commission's order that it would require an impossible increase in passenger traffic to

(Continued on page 634)

Inland Waterways Corp. Reports Profit for 1935

Federal barge line swung from red to black last year, according to annual report

The Inland Waterways Corporation swung from the red to the black in 1935, according to its annual report made public this week, showing an increase both in traffic and earnings as compared with 1934. The consolidated net income of the Inland Waterways Corporation and the Warrior River Terminal Company was $658,902, of which $51,304 was earned by the terminal company. The I. W. C. itself showed a net income of $607,598, as compared with a deficit in 1934 of $920,147. General Thomas Q. Ashburn, president of the corporation, in his report to the Secretary of War, also referred to a net profit of $703,107, including a profit from the sale of some securities, adding that "to the net income there was added funds actually collected for depreciation in the sum of $612,938, so the actual funds derived from operations amounted to $1,271,841." The corporate surplus at the end of the year was $525,876.

The income account of the Inland Waterways Corporation shows total operating revenues amounting to $5,964,764, as compared with $4,301,088 in 1934. Total operating expenses were $5,317,477 in 1935 and $5,168,791 in 1934. The Warrior River Terminal Company had operating revenues amounting to $208,418, as compared with $169,046 in 1934.

General Ashburn refers to a "drastic reorganization through consolidation of departments, reduction of personnel, etc.," as having effected "a very large reduction in overhead, a great increase in efficiency, and corresponding satisfactory increase in revenue." He also says that the traffic manager's report to him "synopsises an unusually active year of negotiations between common water carriers on inland waterways and the railroads", and that "the last joint meeting was characterized by a complete absence of animosity."

"The corporation has consistently supported the federal co-ordinator of transportation," Gen. Ashburn says, "in advocating the regulation of common carriers by water, and the reorganization of the Interstate Commerce Commission, whereby each system of transportation should have a fair representation, and where the public interests should be really safeguarded.

"During the year, there were two separate organizations which studied the question of leasing and operating all the facilities operated by the corporation, which indicates that private capital has about reached the conclusion that the corporation has made great progress in carrying on to the point 'where the system can be transferred to private ownership to the best advantage of the government', as prescribed in the basic law creating the corporation.

"With the passage of the bill last year regulating truck transportation, we are now investigating the pregnant possibilities of truck-water rates. It is probable that we shall inaugurate such a joint service out of Chicago and Kansas City experimentally."

According to the report the tonnage on the lower Mississippi increased from 1,072,687 in 1934 to 1,317,411 in 1935; that on the upper Mississippi increased from 148,068 to 240,215; that on the Chicago division increased from 286,816 to 346,097; and that to and from the Pacific coast increased from 120,598 to 127,900. The total was 2,128,872, as compared with 1,716,020 in 1934.

The report of the secretary-treasurer includes an estimate of "free services received by the corporation which a privately owned carrier would be obliged to pay for," amounting to $124,336. This includes rent of the executive office, telegrams, postage, and $60,000 for federal income tax, but the report says that an estimate of state taxes is omitted in the absence of any definite information on the subject and that most of the terminal facilities used are municipally owned.

R. & L. Historical Society

The Railway and Locomotive Historical Society (Charles E. Fisher, president), Boston, has issued its bulletin No. 39, dated March, 1936. The 62 pages of the pamphlet are devoted wholly to an article on the Champlain & St. Lawrence Railroad, the first railroad built in Canada, and the hundredth year of which is to be celebrated this summer. The line extended from Laprairie, on the south side of the St. Lawrence, about eight miles above Montreal, southeastward to St. Johns, Quebec. In 1850, it was completely rebuilt and extended south to Rouses Point, N. Y., and north to St. Lambert, opposite Montreal. In 1857, the company was amalgamated with the Montreal & New York. Rivalries having resulted in financial ruin, the road was leased in 1863 to the Grand Trunk, of which road, now Canadian National, the pioneer line has become a part.

New York Railroad Club to Discuss Storedoor Service

All points of view on pick-up and delivery services will be discussed by speakers at the next meeting of the New York Railroad Club which will be held on Friday, April 17, at 7:45 p.m. in the auditorium of the Engineering Societies building, 29 West Thirty-ninth street, New York. C. E. Smith, vice-president of the New York, New Haven & Hartford, and president of the Club, will discuss the railroad point of view; R. A. Cooke, manager, traffic department, American Newspaper Publishers Association, will speak from a shipper's standpoint; A. G. McKeever, managing director, Merchant Truckmen's Bureau of New York, will speak for local truckmen; and John V. Lawrence, general manager, American Trucking Associations, Inc., Washington, D. C., for the long-distance and other truckers.

The Annual Outing of the Club will be held on Thursday, June 25, at the Westchester Country Club, Rye, N. Y. Raymond P. Townsend, of the Johns-Manville Sales Corporation, is general chairman.

1935 Railway Purchases Totaled $593,025,000

Reports filed with Bureau of Railway Economics show expenditures slightly under 1934

Railroad purchases of fuel, material and supplies during the year of 1935 aggregated $593,025,000, according to complete reports filed by the carriers with the Bureau of Railway Economics of the Association of American Railroads. This is slightly below the 1934 supply bill, which amounted to $600,224,000, but is higher than 1933, when the total was only $465,850,000. In 1929 the railroads spent $1,329,535,000 for supplies.

Only in the case of fuel did the railroads spend more money last year than they did in 1934. The 1935 fuel item was $232,723,000, whereas in 1934 it was $217,294,000. Bituminous coal last year cost $181,656,000; anthracite coal, $3,464,000; fuel oil, $41,995,000; and gasoline, $3,001,000, while coke, wood and fuel for illumination amounted to $2,607,000.

Forest products purchased, including cross ties, switch and bridge ties, both treated and untreated, timber and lumber for bridges and buildings, equipment, etc., both rough and finished lumber, and other items under this heading, amounted to $57,367,000 in 1935 as against $64,271,000 in 1934. Cross ties cost the railroads $37,266,000 last year and timber and lumber $17,178,000.

Iron and steel products last year cost $156,914,000 as compared wth $159,758,000 in 1934. The biggest item in this grouping was to be found in locomotive and car castings, beams, couplers, frames and car roofs, amounting to $22,054,000. Steel rails last year cost the railroads $20,576,000; track fastenings, track bolts, spikes, etc., $18,928,000; wheels, axles and tires, $17,489,000, while bar iron and steel, spring steel, tool steel, unfabricated rolled shapes, wire netting and chain, boiler, firebox, tank and sheet iron and steel, amounted to $11,775,000. Another important item found in this classification of purchases was interlocking and signal material amounting to $6,378,000, and standard and special mechanical appliances for locomotives, amounting to $6,477,000.

Miscellaneous purchases amounted to $146,021,000 in 1935 compared with $158,901,000 in 1934. Here $19,045,000 was spent for glass, drugs, chemicals, including chemicals for timber treatment and painter supplies; non-ferrous metal and non-ferrous metal products cost $15,149,000; lubricating oils and grease, illuminating oils, boiler compound and waste cost $13,545,000; commissary supplies for dining cars, camps and restaurants cost $12,964,000; stationery and printing, $12,334,000; electrical materials, $10,153,000, and passenger car trimmings, $5,556,000.

Progress in Grade Crossing Program

Plans for grade crossing projects to the amount of $94,557,000 in the federal government's $200,000,000 program had been approved by the Bureau of Public Roads up to April 4.

Sir Edward Beatty Urges Tolls on Canadian Canals

Toll-free Welland canal greater than Panama—Foreign ships filch railway traffic

Addressing the Board of Trade Club in Toronto last week Sir Edward Beatty, president of the Canadian Pacific, advocated the establishment of tolls on Canada's publicly owned canals.

Because the railways had been willing to abandon to waterways certain grain movements, he said, the theory became accepted that there should be no limit to the encouragement of water traffic. A shallow draft canal system by-passed Niagara Falls and St. Lawrence River rapids, and upon those canals tolls were charged, a reasonable concession to a common sense principle that users of public works and not the country at large should pay for them. In 1904 all canal tolls were removed, which, in the opinion of Sir Edward, could not be shown to mean any more money for the grain producing farmers of Western Canada. Then Lake Erie and Lake Ontario were linked by the new Welland Canal, an even more imposing work than the Panama Canal. But Canada did not copy the policy of the builders of the Panama Canal and require the users of the waterway to pay for it. Instead it threw it open to the ships of the world, and today it carries often under foreign flags Canadian commerce taken from Canadian railways.

"Canadian inland shipping has not prospered under this system," said Sir Edward. "I am confident many shippers would welcome fair canal tolls accompanied by reasonable regulation of rates such as is applied to railways. In any such program, if investigation indicated it necessary for the benefit of our farmers, their products should not be subjected to tolls or even to rate regulation."

Sir Edward also discussed motor transport. Commenting upon a recent utterance by an Ontario Minister of the Crown that railway officers need not look to him for help in depriving enterprising young men of the right to engage in highway transportation, Sir Edward replied that too many men had already been deprived of this right by the painful process of bankruptcy. A Western Journal had insisted that he had suggested that commercial traffic should be legislated off the highways—for the sake of the railways, which was not his view.

Highways, he contended, had been built regardless of cost and, despite timid efforts, control of their exploitation had failed to develop as it should. Many of the governing bodies providing highways were now in grave financial distress, and on the whole, taxation of highway users was far from adequate to service highway debts and maintain the roads. Enterprising highway carriers were, many of them, far from content. Only by lack of reasonable care of the interests of their workers were they able to meet expenses in some cases. Lack of regulation of rates made the whole business one of most destructive competition.

This was not, he pointed out, "railway propaganda." The Automotive Transport Association of Ontario, a body organized by highway carriers, in a brief to the Minister of Highways on October 25, 1934, had confirmed everything he had said—the cut-throat nature of competition; rates below costs of service; exploitation of workers; bankruptcy of operators and damage to interests of truckers and shippers alike.

"Nor," said Sir Edward, "did I suggest, as the Minister puts it, that 'we would do well to require the freight and passenger business on our highways to develop along parallel lines with the railways.' It is my belief that this is the very root of the troubles to which the Ontario Automotive Association referred in their brief. Highway services should be auxiliary to railways. Their development as substitution for railways is the reason for their failure to make profit for their operators, while inflicting unnecessary damage to railway interests."

Sir Edward denied that freight rates were imposed to the limits of the public's capacity to pay. As Professor Jackman has stated in his study of the economic principles of transportation, he said, "charging what the traffic will bear is charging such a rate as will enable the commodity to move freely with the least possible burden on producer and consumer.

"Men who have been for a lifetime engaged in providing transportation facilities for a great country," said Sir Edward, "are the most ardent advocates of reducing freight rates to the minimum. Modern transportation is a typical mass-production business; it thrives on volume, not high prices."

Railway men could not deny that the use of highway common carriers had tended to lower transportation charges in many cases. But they could say that reduction so gained appeared to them to have been gained in most cases at the expense of taxpayers, including private motorists, or at the expense of carriers who, as their own association argued, had become a procession of individuals following each other into heavy losses.

Bridge Bombing in Mexico Wrecks Passenger Train

Portions of a passenger train of the Mexican Railway (train No. 6) were hurled into a deep ravine near Paso del Macho, 48 miles from Vera Cruz, on April 6, when the bridge spanning the ravine was bombed, resulting in the death of eight or more persons and injury of a large number. The wreck occurred at night two hours after the train left Vera Cruz for Mexico City. The bombing, which apparently was timed to take place as the train passed over the bridge, was reported to have been the work of rebels.

The engine, the sleeping cars and the express and mail cars were precipitated into the ravine, while the first and second-class passenger cars, which did not leave the track, took fire and were burned up. Several important figures in Mexican politics were aboard the train.

Eastern Storedoor Service Favored by Atlantic Board

Reaffirms its stand in resolution adopted at April 3 meeting—Clement a speaker

The Atlantic States Shippers' Advisory Board, at its April 3 meeting in Atlantic City, N. J., adopted a resolution reaffirming to the Interstate Commerce Commission the Board's support of the principle of pick-up and delivery service. In this connection General Chairman Frank Rich, traffic manager of J. C. Penney Company, was authorized to appoint a committee to appear before the commission in support of collection and delivery.

The board has denied that storedoor service discussions in its executive committee meeting included any reference to political considerations influencing the action of the Interstate Commerce Commission in suspending the c. & d. tariffs filed by Eastern roads. Dispatches from Atlantic City to New York newspapers had quoted executive committee members as alleging that politics played a part. A. C. Welsh, secretary of the Brooklyn Chamber of Commerce Traffic Division and general secretary of the Board, incorporated the denial in letters to the newspaper first publishing the dispatch and to Chairman Mahaffie of the I. C. C.

To the former Mr. Welsh said that "no such statement was made," adding that "There is no doubt in the minds of the officers of the Board or the members of the executive committee but that the argument was set after due consideration by the commission and was justified by the protests before it and the decision was rendered entirely on the record made there."

The attention of Chairman Mahaffie was called to the newspaper stories, "which indicated that certain unfortunate statements had been made by members of the executive committee." Continuing, the letter said that the Board "is shocked at this misquotation and is taking immediate steps to correct the improper and unjustified inference."

In addition to its action on storedoor service the Board adopted a resolution opposing the Wheeler-Crosser bill which would set up a plan for the protection of railway employees displaced in consolidation projects; also, it opposes the Pettengill bill as now drawn for repeal of the long-and-short-haul clause of the Interstate Commerce Act although it would approve it with the amendments suggested by Coordinator Eastman.

Among the speakers at the meeting was M. W. Clement, president of the Pennsylvania, who listed, as the most important problems confronting the railways: Public relations, competition, property investment, and labor. Mr. Clement discussed each of the foregoing in turn after first referring to highway and waterway competition, which he called "Transportation by Taxation."

As to public relations he said that the results of railway competition have been such that "while individually the carriers

have perhaps put their best foot forward, collectively the industry has seldom been able to do so." He added, however, that the "maintenance of an understanding relationship with the public is one of the big jobs that the Association of American Railroads has to perform," and in this work it should have the "full assistance of the Advisory Boards."

In connection with competition, Mr. Clement called upon the shippers to see that railways have "equality of opportunity," adding that under such a set up "the workings of natural economic forces should be allowed to prevail for the common good."

Discussing railroad investments, he pointed out that "with the natural changes in the order of transportation, still greater improvements in the art of transportation must come, and the railroads have a right to expect that they shall be permitted to earn sufficient to retire the capital that is invested in these properties, brought about by these economic changes, and to earn sufficient to properly care for labor that may be displaced through these changes."

Labor, Mr. Clement continued, is the great part of rail transportation costs. He cited the transition of transport employees from railways to other carriers and warned that the "transition may be greater" unless the railroads are permitted to solve their problems. The effort to protect labor's interest, he added "cannot be 'evangelistic'; it must be practical."

Concluding, Mr. Clement said:

"The fundamental problems of transportation itself are few and not difficult of understanding. The complexity comes from all the rules and regulations that surround it and the many other problems that have attached themselves to transportation, with the insistency that they be solved as part of the transportation problems. It is the ability to weave your way through this maze, intent upon that thing that was originally to be accomplished and not allowing yourself to be distracted by the non-essentials that produces good transportation. It is simply the problem of moving persons and goods smoothly, swiftly and securely along the lines of least resistance from point of origin to destination, at least cost.

"Around this simple thing have been woven the problems of many varied interests, and it is that which makes the complexity that is so difficult to understand. There are none who so well understand these problems as do the men of these Advisory Boards, and there are none of these problems which we, together, cannot solve!"

Report of Bureau of Explosives

W. S. Topping, chief inspector of the "Bureau for the Safe Transportation of Explosives and Other Dangerous Articles," has sent to J. M. Symes, vice-president of the Association of American Railroads, the annual report of the Bureau for the year 1935. The Bureau has now been operating for about 29 years, and the report gives a brief description of its activities. The contrast between the imperfect safety of railroad transportation, prior to 1907, with the constantly improving safety which has been reported by this bureau since then is well known. The record for 1935 shows no explosion in railway transportation of explosives, no person killed, no person injured; and this is the record for every year since 1927. Less dangerous articles, also constantly under the surveillance of this bureau, showed as usual a record of comparatively small losses; except that under the head of inflammable liquids, which includes gasoline, there was a loss in 1935 of $519,005, nearly all of which was incident to collision or derailment.

The number of routine inspections made by the Bureau in 1935 was 23,909, a slight increase over the preceding year. In connection with rough handling of cars, the Bureau takes cognizance of other freight as well as dangerous articles, and reports that the use of impact recorders in freight cars gives increasing satisfaction. In Chicago and environs, where there is a heavy intra-city interchange of loaded cars, the use of impact recorders has been found economical.

A table is given covering 15 years, showing derailments caused by failure of arch-bar trucks, from which it is found that the major portion of the losses in this class was due to the presence of dangerous articles in the cars. This table shows, for the 15 years, 142 tank cars derailed; other cars derailed, 34; losses, tank cars, $1,631,868; other cars, $483,538.

The report gives the usual table of fire and other loses in freight described in the freight tariffs as "dangerous," classified by causes (86 causes), and another table giving in more detail the causes of fires reported in the transportation of gasoline, in the year 1935; also a table describing briefly 12 fires in cars of charcoal due to spontaneous combustion. The report of Charles P. Beistle, chief chemist, is given in an appendix.

N. C. Income Tax on Interstate Railroads

In its North Carolina income tax returns the Norfolk & Western claimed it had no taxable income. The Commissioner of Revenue made reassessments for 1927, 1928 and 1929, amounting in all to $86,421.71. The amount was paid and the railroad sued to recover back the payment. The North Carolina Supreme Court (208 N. C. 397) affirmed judgment for the state. This judgment is now affirmed by the Supreme Court of the United States.

By the North Carolina statute the net income of interstate railroads doing business in the state is taxed according to a formula providing that "their net income within this state shall be ascertained by taking their gross 'operating revenues' within the state, including as their gross 'operating revenues' within this state the equal mileage proportion within this state of their interstate business, and deducting from their gross 'operating revenues' the proportionate average of 'operating expenses' or 'operating ratio' for their whole business as shown by the Interstate Commerce Commission standard classification of accounts."

The Supreme Court holds that this formula is not void on its face, since "a division of revenues and costs in accordance with state lines can never be made for a unitary business with more than approximate correctness. There is a tendency, none the less, for rates to be so adjusted to expenses over different portions of a system as to produce, when averages are considered, a uniformity of net return, or a fair approach thereto. Thus mileage may have at times a relation to a tax upon net income which it may not bear to a property tax or even to one upon the value of a franchise. * * * In the perplexities besetting the process of assessment the statute is the outcome of a reasonable endeavor to arrive at a proportion of general validity."

But the tax may not be valid as imposed. "A formula not arbitrary on its face or in its general operation may be unworkable or unfair when applied to a particular railway in particular conditions. A segment of the line may operate under handicaps resulting from the nature of the traffic, the topography of the country, the maladjustment or inadequacy of passenger or freight tariffs in one district or another." If that were shown, with an ensuing burden on the taxpayer grossly in excess of the results of a more accurate apportionment, the statute would to that extent be unconstitutional.

The burden is on the taxpayer, however, to show oppression. The court held this burden was not discharged by giving evidence of the ratio between actual and average expenses while keeping silent as to the ratio between actual and average receipts.—Norfolk & Western v. State. Decided March 30, 1936. Opinion by Mr. Justice Cardozo.

Earnings of Clerical Employees Since 1924

The Interstate Commerce Commission's Bureau of Statistics has compiled a statement showing the trend of earnings, service, and compensation of seven classes of clerical employees of Class I steam railways since 1924. The exclusion of switching and terminal companies in the figures for the last three years of the period is said not materially to affect the showing. If the clerks of such companies were included in the years 1933, 1934, and 1935, the totals would be increased about 2 per cent.

In 1924 the total number of persons employed in the seven clerical classes was 219,415. The total declined after 1926 and fell to 119,996 in 1933, a reduction of 99,419, or 45.3 per cent. The average number increased slightly in 1934 but in 1935 it dropped to 118,993, the lowest point in the twelve-year period.

The total compensation paid employees in these seven classes fell from $346,892,475 in 1924 to $186,375,226 in 1933, a decrease of 46.3 per cent. The total in 1934 increased 5.1 per cent, and, in 1935, 12.7 per cent over the 1933 figures.

The average earnings per hour reflect the general 10 per cent reduction effective February 1, 1932, and the gradual restoration of the 1931 level during 1934 and 1935.

As indicated by the relative figures (1924 = 100) the decline in employment and total compensation has been most severe in the large group of comparatively low salaried employees included in reporting division No. 7, Clerks (B and C),

which covers approximately 70 per cent of the total clerical forces mentioned in this statement. The index of employment for this group fell to 48.70 in 1935. The index of total compensation fell to 47.51 in 1933 and increased to 53.87 in 1935. Overtime payments to employees in this group represented 3.1 per cent of their total compensation in 1924 and 1.5 per cent in 1935. The average earnings per hour have increased rather steadily from $0.584 in 1924 to $0.658 in 1935, although there was a decrease to about $0.60 in 1932, 1933, and 1934.

The ratio of clerical employees to the total of all railway employees has remained practically constant from 1924 to 1935, notwithstanding the great fluctuation in the totals.

Railroads Ask Modifications in New Tax Plan

Several modifications of the proposed tax bill now being considered in Congress, to cushion the effect on the railroads of the administration's plan for taxing undistributed net income of corporations, were urged by R. V. Fletcher, general counsel of the Association of American Railroads, at a hearing on April 3 before the House ways and means committee. The hearing was held on a report drafted by a sub-committee outlining a tentative substitute for the present basis of corporation taxation by the federal government which had not yet been put into the form of a specific bill. Further hearings are to be held before the Senate finance committee. The main idea of the plan is supposed to be to compel corporations to distribute more of their earnings in dividends, and to make the dividends taxable in the hands of the stockholders, by placing a graduated tax on the undistributed portion, subject to certain adjustments.

Mr. Fletcher pointed out that the railroads are in no position to stand increased taxation, that their total taxes have increased from 13.1 per cent of their net operating income in 1916 to 32 per cent in 1935, and also that while most of them are not thinking of dividends in the near future they have many urgent ways of distributing what net income they may be able to earn which ought not to be penalized. He expressed gratitude to the subcommittee for having retained in the plan the principle of allowing railroads to file consolidated returns but he pointed out that it is necessary for many railroads to apply net income to capital expenditures when it is insufficient to pay any dividend. He also spoke of the necessity in the near future for railroads to use part of their net to establish sinking funds, under requirements of the Interstate Commerce Commission or for other reasons. His statement of the provisions requested by the railroads for incorporation in any law that may be enacted for the taxation of undistributed corporate earnings was as follows:

"It is recommended that railroads be permitted, in arriving at 'undistributed net income,' to deduct from 'adjusted net income,' in addition to the other deductions mentioned in recommendation II of the subcommittee's report, the following items:

(1) Amounts applied to sinking and other reserve funds under mortgages, deeds of trust, or other contracts, or paid or reserved to retire funded debt, issued or assumed, but not to exceed 1 per cent of total funded-debt obligations issued or assumed and outstanding at the end of the taxable year.

(2) Amounts paid to the United States of America or any corporation or other agency thereof in the reduction of loans made to or assumed by the taxpayer.

(3) Expenditures chargeable to capital account made pursuant to requirements by or agreements with Federal, State, or other public authority.

(4) Amounts provided for by reorganization plans to be invested in additions and betterments before the payment of interest on bonds issued pursuant to said plans.

"It is further recommended that railroads, in arriving at 'adjusted net income,' be permitted to deduct allowances for depreciation and losses on retirement of property as provided hereunder:

(*a*) Where property, including equipment, is being operated under an agreement with the owner thereof, the lessee shall be entitled to deduct a reasonable allowance for the exhaustion, wear and tear, and obsolescence of such property, unless by contract the lessee is obligated to pay to the lessor such an amount as additional rental, in which event the lessor shall be entitled to make such deduction.

(*b*) The amount of losses incident to the retirement of leased property, including equipment, as permitted under regulations prescribed by the Interstate Commerce Commission, shall be allowed as a deduction from the gross income of the lessor or lessee, as contracts may provide."

Net Deficit for January $7,913,897

Although the Class I railroads had a considerable increase in net railway operating income in January as compared with January last year they still had a net deficit after payment of fixed charges of $7,913,897. This, however, compares with a deficit of $21,389,720 in January, 1935.

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS IN THE UNITED STATES

Compiled from 138 Reports (Form IBS) Representing 144 Steam Railways

TOTALS FOR THE UNITED STATES (ALL REGIONS)

	For the month of January 1936	1935
Income Items		
1. Net railway operating income	$35,764,750	$21,932,546
2. Other income	11,886,528	12,343,875
3. Total income	47,651,278	34,276,421
4. Miscellaneous deductions from income	1,517,116	1,339,773
5. Income available for fixed charges	46,134,162	32,936,648
6. Fixed charges:		
6-01. Rent for leased roads	11,046,471	10,981,855
6-02. Interest deductions	41,786,903	42,125,866
6-03. Other deductions	214,381	218,432
6-04. Total fixed charges	53,047,755	53,326,153
7. Income after fixed charges	§ 6,913,593	§ 20,389,505
8. Contingent charges	1,000,304	1,000,215
9. Net income*	§ 7,913,897	§ 21,389,720
10. Depreciation (Way and structures and Equipment)	16,121,578	16,353,378
11. Federal income taxes	1,605,187	1,326,552
12. Dividend appropriations:		
12-01. On common stock	2,449,329	2,987,658
12-02. On preferred stock	861,547	442,222
	Balance at end of January 1936	**1935**
Selected Asset Items		
13. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$695,708,537	$793,931,230
14. Cash	$463,351,870	$312,061,355
15. Demand loans and deposits	3,964,754	12,541,865
16. Time drafts and deposits	27,872,546	32,424,656
17. Special deposits	66,813,944	64,052,792
18. Loans and bills receivable	2,772,715	5,413,259
19. Traffic and car-service balances receivable	56,360,769	52,903,550
20. Net balance receivable from agents and conductors	42,123,354	43,284,829
21. Miscellaneous accounts receivable	135,704,113	145,878,321
22. Materials and supplies	282,657,320	296,989,132
23. Interest and dividends receivable	27,210,202	41,963,157
24. Rents receivable	1,865,736	2,500,955
25. Other current assets	5,728,804	10,608,593
26. Total current assets (items 14 to 25)	$1,116,426,127	$1,020,622,464
Selected Liability Items		
27. Funded debt maturing within 6 months†	$286,752,366	$215,462,933
28. Loans and bills payable‡	$310,729,669	$323,256,997
29. Traffic and car-service balances payable	70,712,466	66,234,832
30. Audited accounts and wages payable	215,969,429	199,955,133
31. Miscellaneous accounts payable	69,698,351	76,100,905
32. Interest matured unpaid	418,563,494	310,681,510
33. Dividends matured unpaid	9,934,913	8,795,363
34. Funded debt matured unpaid	397,453,668	277,660,723
35. Unmatured dividends declared	6,709,667	6,124,667
36. Unmatured interest accrued	103,078,977	103,657,154
37. Unmatured rents accrued	26,866,690	25,827,236
38. Other current liabilities	19,725,137	23,123,689
39. Total current liabilities (items 28 to 38)	$1,649,442,461	$1,421,418,209
40. Tax liability (Account 771):		
40-01. U. S. Government taxes	$38,981,342	$34,264,522
40-02. Other than U. S. Government taxes	128,762,608	125,953,505

* January, 1936, net income includes charges in the amount of $1,403,627 on account of accruals for excise taxes levied under the Social Security Act of 1935. The reported net income for January, 1935, includes charges of $2,186,994 because of liability under the Railroad Retirement Act of 1934.

† Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within six months after close of month of report.

‡ Includes obligations which mature not more than two years after date of issue.

§ Deficit or other reverse items.

NET INCOME OF LARGE STEAM RAILWAYS WITH ANNUAL OPERATING REVENUES ABOVE $25,000,000

Name of railway	Net income after depreciation and retirements, For month of January 1936	Net income after depreciation and retirements, For month of January 1935	Net income before depreciation and retirements, For month of January 1936	Net income before depreciation and retirements, For month of January 1935
Alton R. R.	* $120,817	* $172,730	* $93,605	* $144,269
Atchison, Topeka & Santa Fe Ry. System§	* 474,616	*1,046,739	470,561	* 65,583
Atlantic Coast Line R. R.	662,346	426,766	842,927	616,429
Baltimore & Ohio R. R.	* 332,764	* 508,138	285,697	71,622
Boston & Maine R. R.	* 419,334	* 422,783	* 282,297	* 289,692
Central of Georgia Ry.†	* 272,065	* 290,994	* 207,790	* 228,715
Central R. R. of New Jersey	* 132,941	* 204,829	* 5,436	* 58,419
Chesapeake & Ohio Ry.	3,035,104	1,943,328	3,734,863	2,644,098
Chicago & Eastern Illinois Ry.‡	* 91,980	* 144,531	* 41,821	* 92,943
Chicago & North Western Ry.‡	*1,214,662	*1,287,821	* 799,431	* 858,242
Chicago, Burlington & Quincy R. R.	220,621	* 468,017	603,040	* 46,419
Chicago Great Western R. R.‡	* 183,538	* 279,558	* 142,552	* 235,796
Chicago, Milwaukee, St. Paul & Pacific R. R.‡	*1,054,872	*2,107,470	* 605,690	*1,637,254
Chicago, Rock Island & Pacific Ry.‡	*1,379,488	*1,602,980	*1,019,719	*1,232,193
Chicago, St. Paul, Minneapolis & Omaha Ry.	* 266,094	* 297,521	* 216,122	* 244,606
Delaware & Hudson R. R.	* 192,582	* 308,406	* 97,923	* 225,711
Delaware, Lackawanna & Western R. R.	* 199,207	* 163,644	23,756	61,295
Denver & Rio Grande Western R. R.	* 269,172	* 321,403	* 171,508	* 222,136
Elgin, Joliet & Eastern Ry.	106,007	85,785	181,374	159,858
Erie R. R. (including Chicago & Erie R. R.)	* 264,962	* 223,181	61,023	140,262
Grand Trunk Western R. R.	111,062	* 107,240	198,244	* 17,899
Great Northern Ry.	*1,407,301	*1,903,190	*1,103,395	*1,610,634
Illinois Central R. R.	* 186,933	* 431,113	368,697	204,053
Lehigh Valley R. R.	* 134,803	7,278	57,586	213,014
Long Island R. R.	* 266,919	* 332,629	* 167,500	* 237,013
Louisville & Nashville R. R.	489,140	218,588	837,621	562,196
Minneapolis, St. Paul & Sault Ste. Marie Ry.	* 612,558	* 739,998	* 510,244	* 648,697
Missouri-Kansas-Texas Lines	* 279,616	* 684,029	* 172,538	* 574,482
Missouri Pacific R. R.‡	* 878,113	*1,602,337	* 526,851	*1,237,348
New York Central R. R.¶	* 543,241	* 677,662	803,502	709,529
New York, Chicago & St. Louis R. R.	137,428	* 8,422	270,601	127,480
New York, New Haven & Hartford R. R.‡	* 590,701	* 613,967	* 305,766	* 303,038
Norfolk & Western Ry.	2,215,798	1,064,046	2,589,020	1,431,883
Northern Pacific Ry.	*1,142,860	*1,490,123	* 886,374	*1,227,767
Pennsylvania R. R.	1,408,137	983,873	3,184,769	2,711,094
Pere Marquette Ry.	178,552	105,057	390,779	320,576
Pittsburgh & Lake Erie R. R.	173,485	193,546	323,958	335,951
Reading Co.	439,388	308,546	707,604	561,769
St. Louis-San Francisco Ry.‡	* 629,502	*1,130,354	* 360,195	* 866,164
St. Louis Southwestern Lines‡	* 44,850	* 53,749	5,652	* 1,354
Seaboard Air Line Ry.†	* 694,351	* 765,629	* 537,746	* 612,064
Southern Ry.	8,576	* 540,679	279,311	* 305,981
Southern Pacific Transportation System‖	*1,775,303	*1,451,426	* 517,886	* 823,758
Texas & Pacific Ry.	34,870	* 63,867	131,987	36,569
Union Pacific R. R.	248,373	6,523	776,449	544,515
Wabash Ry.†	* 269,590	* 443,601	* 90,960	* 263,051
Yazoo & Mississippi Valley R. R.	* 195,077	* 326,390	* 153,215	* 277,441

† Report of receiver or receivers.
‡ Report of trustee or trustees.
§ Includes Atchison, Topeka & Santa Fe Ry., Gulf, Colorado & Santa Fe Ry. and Panhandle & Santa Fe Ry.
¶ Includes Boston & Albany, lessor to New York Central R. R.
‖ Includes Southern Pacific Co. and Texas & New Orleans R. R. The operation of all separately operated solely controlled affiliated companies resulted in a net deficit of $333,330 for January, 1936, and $407,273 for January, 1935. These figures are not reflected in this statement.
* Deficit.

Fifty-four of the roads reported a net income of $11,794,145, while 81 reported a deficit amounting to $19,708,042. The Interstate Commerce Commission's monthly compilation of selected income and balance-sheet items and a statement of the net income or deficit for the individual roads having annual operating revenues above $25,000,000 are given in the accompanying tables.

Stoker Hearings Resumed

Hearings on the complaint filed by the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen asking the Interstate Commerce Commission to require the railroads to equip their locomotives with automatic stokers were resumed at Washington on April 7 before Director Bartel of the commission's Bureau of Service.

Railroad Enthusiasts

Burt T. Anderson, director, Bureau of Railway Signaling Economics, and Otto Kuhler, industrial engineer, will be the speakers at the next meeting of the New York Division, Railroad Enthusiasts, Inc., to be held on April 24 in Room 2726, Grand Central Terminal, New York City, at 7:45 p.m. Mr. Anderson will discuss "Signaling A Changing World" while Mr. Kuhler will speak on "Sex Appeal in Trains." Both talks will be illustrated.

Canadian Lines Extend Pick-Up and Delivery Service

The Canadian National and the Canadian Pacific have established pick-up and delivery service at points between Vancouver, B. C., and as far east as Chu Chua and Sicamous, and throughout the Okanagan Valley of British Columbia. The service applies only to l.c.l. freight moving between these points.

Club Meetings

A spring smoker will be held by the Transportation Club of Louisville on April 14, at which W. L. Meyers, agent of the Indiana Motor Rate and Tariff Bureau, will speak on Motor Carrier Rates and Tariffs.

The annual dinner of the Metropolitan Traffic Association of New York will be held on Thursday evening, April 23, at the Park Central Hotel in that cty.

N. & W. Coal Booklet

The Norfolk & Western recently issued a 20-page booklet listing all coal and coke operations on its lines in Virginia, West Virginia and Kentucky. The booklet, which is being distributed to retail coal dealers, distributors and large consumers, gives an alphabetical list of coal and coke operations in the Pocahontas, Thacker, Kenova, Tug River, Clinch Valley and Virginia Anthracite fields; also a list of selling agents and a four-color map showing each of the operations located on the Norfolk & Western.

New York Chapter, R. & L. Historical Society

Charles E. Fisher of Boston, Mass., president of the Railway & Locomotive Historical Society, Inc., was the speaker at the April 10 meeting of the New York Chapter of the Society, which was held at the Engineering Societies building, 29 West Thirty-ninth Street, New York. The New York Chapter has announced plans for a dinner to be held on Thursday evening, June 11, and is also preparing a schedule of five or six inspection trips of railway facilities to be arranged for members this year.

"Co-ordination" to Go Ahead in Canada

Much significance is attached at Ottawa to a brief statement made in the House of Commons last week by Hon. C. D. Howe, Minister of Railways and Marine, replying to a question regarding the decision of the Canadian Pacific and the Canadian National to unify their roundhouse facilities at Ottawa at an estimated annual saving of $35,000.

"This particular plan," said Mr. Howe, "is in line with the unification for which both the Canadian National and the Canadian Pacific have received a mandate from this parliament. It seems to be a rather obvious move in that direction."

Plan Drafting of National Smoke Prevention Code

Plans are being made for the drafting of a national "smoke prevention code" with law-enforcing features at the annual convention of the National Smoke Prevention Association, which is to be held at the Hotel Ansley, Atlanta, Ga., on June 2-5. The code, which is to be drafted by representatives of various interested agencies in co-operation with the association, will be designed to be applicable to cities throughout the country. It is expected that those in attendance at the convention will include municipal officials from practically every large city, railroad officers, hotel managers and other business and industrial leaders.

More Camp Coaches in Britain

British railways are now equipping 108 additional camp coaches in order to meet the anticipated demands of the coming summer's vacationists. These camp coaches, fitted with all necessary camping equipment, are parked by the railways at suitable camping sites and rented to vacationists, a condition of tenancy being that the railway be used for travel to and from the camp coach.

The 108 new coaches will represent an increase of 50 per cent over the number of these vehicles in service last year and will bring the total number available to 323. Many new sites have been selected, includ-

ing coastal and inland localities from Cornwall to Rosshire and also Northern Ireland.

Joint Control of Truck Concern Asked by Three Roads

An application for permission to acquire jointly the properties of a motor-trucking concern was filed with the Interstate Commerce Commission on April 7 by the Chicago & North Western, the Chicago, Burlington & Quincy and the Union Pacific. The trucking company involved is the Union Transfer Company, Omaha, Neb., which operates trucks in Illinois, Iowa, Nebraska, and Minnesota. While the cost of the purchase is given as $150,000, it is expected that expenditures for additional facilities and other expenses will bring the cost of setting up the co-ordinated system to $600,000, of which each road will provide $200,000.

British Road Designs Car for Fragile Freight

The Great Western of Great Britain has recently developed a new type of freight car designed to minimize damage in transport of such commodities as eggs, fruit, furniture and other fragile articles. The design of the new car is described in a recent announcement as embodying "simplicity itself," the interior being fitted with a series of partitions which can be adjusted to hold the stacked commodities in position no matter how small the load may be.

The decision to equip 100 cars was the result of a year's experiment with 15 originally equipped. It is claimed that "this new system is the best so far devised for the protection of traffic in transit."

Boston-Montreal Lines Open

On Wednesday, April 8, flood damage to the Boston & Maine tracks were repaired, so that passenger train service could be resumed between Boston and Concord, N. H. The first through train, the Cannon Ball, for White River Junction, Vt., left Boston at 4:30 p.m. on that day. The through trains between Boston and Montreal, both over the Central Vermont and over the Canadian Pacific, resumed their regular runs on the evening of that day. Restricted speed was still in effect in a number of places.

April 9 saw the restoration of four through trains on the Fitchburg division; and the placing of the "Minute Man" back in service was scheduled for about April 15.

British Roads to Build 587 New Locomotives

British railways will build 587 new locomotives in their own shops in the near future, according to an announcement recently issued. Included will be 17 locomotives which the London & North Eastern will build of a design generally similar to that of its streamlined "Silver Link" which now hauls the L.N.E. "Silver Jubilee" train between London and Newcastle. The decision of the L.N.E. in this connection, the announcement says, is "the result of the remarkable success which has attended the working of the existing streamlined locomotives. It has been found that the streamlining has saved a great deal of power, in addition to which it has solved the problem of lifting smoke and steam so that it does not obstruct the driver's view. For high speed running at rates in excess of 60 m.p.h. it has also been found that the reduction of wind resistance effected by streamlining has had beneficial effects upon fuel consumption."

Air Express Traffic Up

Air express shipments handled by the Railway Express Agency during February were 57 per cent in excess of the number handled in February, 1935, while shipments of railway express "show an enormous increase" in poundage according to information made public on April 1. February, the announcement points out, marked the beginning of the expanded service made possible by the co-ordination of 23 domestic air lines with the Air Express Division of the Railway Express Agency.

The average air express shipment in February was one pound heavier than in February, 1935, while the average length of haul decreased, a situation which, Vice-president C. R. Graham says, "indicates unmistakably that shippers are seeing the advantages of same-day delivery at near points."

Hearing on Truck-Railroad Plan

A hearing on the proposal of the Chicago Great Western to transport trailers of the Keeshin Transcontinental Freight Company between Chicago and the Twin Cities was held before Examiner W. A. Disque of the Interstate Commerce Commission at Minneapolis, Minn., on March 31. The tariff, which was suspended by the commission from March 10 to October 10 pending investigation, provided for the movement of loaded trailers on flat cars at a rate of $42.50 a trailer. It is being opposed by 10 competing railways.

Trustees for the C. G. W. asserted that as a result of the tariff increased revenues of $250,000 a year would accrue. Those opposing the tariff contended that the rate would jeopardize the present rate structure and would reduce the revenue of competing carriers $900,000 annually.

German Railways Celebrating 25th Anniversary of Electric Service

The German Railways are celebrating the twenty-fifth anniversary of the first electrically-driven train on their main line. Electrification of the entire German railway system was begun in June, 1911, with the electrifying of the line between Dessau and Bitterfeld.

As far back as 1879, Werner v. Siemens exhibited the first high-power electric locomotive, which consisted of a 3-hp. machine, operated from 150 volts direct current, which attained a speed of 4½ miles an hour, pulling three passenger cars on a narrow-gage track. The first regular electric train service was initiated in 1902, with the opening of the Berlin and East Lichterfelde Railway.

The German Railways have to date electrified a total of about 1,370 miles of line. Further extensions of electrified trunk lines are being planned, the first of these to be the Berlin-Leipzig-Munich route. Announcement has been made that when this plan is put through the initial step will have been taken toward an international electric railway system, which shall extend from Berlin to Rome and Naples.

North Western to Expand Service to North Woods Points

"The Flambeau," fast day train of the Chicago & North Western to the North Woods region of Wisconsin and upper Michigan, which was inaugurated in 1935 as a once-a-week train from Chicago and Milwaukee, will this summer be run northbound daily except Sundays and Mondays between June 26 and September 11. Complete air-conditioning will be provided in all the regular equipment of the train. The train will leave Chicago at 1:15 p. m.; arrive at Eagle River, Wis., at 9:30 p. m. and Watersmeet, Mich., at 10:10 p. m. The section serving the Woodruff (Wis.) region will arrive at that place at 9:25 p. m. and at Ironwood, Mich., at 11:00 p. m. Southbound the train will be run daily except Monday and Tuesday, leaving the North Woods districts early in the afternoon and arriving at Chicago at 10:45 p. m.

Coach Fare of 2.5 Cents Asked by Eastern Lines

(*Continued from page 628*)

overcome the effect of the fare reductions, because such an increase in traffic itself would require additional service and increase expenses.

The present financial condition of the railroads, the petition said, does not warrant the serious risk to their revenues which would result from enforcement of the commission's order, and the effects of the recent floods were referred to as emphasizing the point. The Pennsylvania's property damage was estimated at $8,500,000 and its business loss as the result of the floods at $4,000,000.

Asserting that the present fares fail to return to the carriers the expenses properly attributable to the service and a reasonable profit when tested by any accepted standard, the petition continued:

"The commission has based its order upon a novel conception of a new theory of unreasonableness, which is believed to involve not the exercise of the power of regulation but an interference with managerial discretion not warranted by the interstate commerce act, and not constitutionally permissible if the act, properly construed, undertook to confer such power upon the commission. The order of the commission, therefore, confronts the managements of your petitioners with the alternative of submission to what they believe to be an unlawful order, or with resort to the courts to have it set aside, unless at the commission's own hands they may receive relief." The roads, however, reserved all rights to test the order in the courts.

Equipment and Supplies

D. & R. G. Improvement Program

The Denver & Rio Grande Western's $2,286,248 improvement program for 1936, authorized by the district court, covers only the first year of a comprehensive program which will require four years for completion. This year's program provides for the expenditure of $600,000 for 10,000 tons of rails that have been ordered from the Colorado Fuel & Iron Company; $250,000 for air-conditioning coaches, lounge-observation cars and dining cars which are being built at the Burnham shops; and the balance for widening cuts and fills, filling trestles, riprapping and roadbed protection, ballasting, bridges, trestles, culverts, elimination of grade crossings, crossing signals, additional main tracks, yard tracks, sidings and industrial tracks.

LOCOMOTIVES

THE LOUISIANA & ARKANSAS has ordered five locomotives of the 2-8-2 type from the Lima Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of March 14, page 486.

THE NEW YORK CENTRAL has placed a contract with the Electro-Motive Corporation for seven Diesel-electric switching locomotives. These will be used on the Central's lines in the Chicago territory. Inquiry for this equipment was reported in the *Railway Age* of March 14, page 486.

PASSENGER CARS

THE NEW YORK, NEW HAVEN & HARTFORD has ordered 50 light-weight passenger cars from the Pullman-Standard Car Manufacturing Company, 20 of which will be for main line service and 30 for suburban service. Inquiry for this equipment was reported in the *Railway Age* of February 22, page 340.

THE ATCHISON, TOPEKA & SANTA FE has ordered from the Edward G. Budd Manufacturing Company an eight-car, streamlined, stainless steel train for delivery within six months which will be placed in service in this company's "Super Chief" on a once-a-week round trip schedule of 39 hours, 45 minutes each way between Chicago and Los Angeles, Cal. Drawn by this company's 3600 hp. Diesel electric locomotive, the "Super Chief" will go into service early in May on this schedule and pending delivery of the light-weight equipment will operate with standard steel equipment. The new streamlined train will include a baggage car, a dining car, a cocktail lounge club car, four sleepers and a sleeper observation car, and will weigh about one-half as much as a conventional steel train.

IRON AND STEEL

THE ERIE has ordered 18,099 tons of rail, including 6,385 tons of 112-lb. rail and 7,714 tons of 131-lb. rail from the Carnegie-Illinois Steel Corporation, 2,462 tons of 112-lb. rail from the Bethlehem Steel Company, and 1,538 tons of 112-lb. rail from the Inland Steel Company.

THE CHICAGO & EASTERN ILLINOIS has ordered 6,000 tons of rails.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE has ordered 1,000 tons of rails from the Carnegie-Illinois Steel Corporation.

THE WHEELING & LAKE ERIE has ordered 2,500 tons of rails from the Carnegie-Illinois Steel Corporation.

THE GREEN BAY & WESTERN has ordered 1,460 tons of rails from the Carnegie-Illinois Steel Corporation. This company has also ordered 2,000 tons of 90-lb. relaying rails which it plans to lay this summer.

MISCELLANEOUS

CHICAGO, BURLINGTON & QUINCY.—The Electro-Motive Corporation, LaGrange, Ill., has placed an order with the Timken Roller Bearing Company, Canton, Ohio, for Timken bearings and journal boxes to equip all axles of four high speed 1800-hp. and two 1200-hp. Diesel-electric locomotives, which it is building for the Chicago, Burlington & Quincy. These new locomotives will haul the new Zephyr trains between Chicago and Denver, and Chicago and the Twin Cities, which will also be completely equipped with Timken bearings similar to the other Zephyrs in service.

Construction

MAINE CENTRAL.—The bridge carrying the tracks of this road over the Androscoggin river between Brunswick, Maine, and Topsham, which was swept from its piers by an ice jam during the recent floods, will be raised and restored for service, a contract for the work having been let to the Merritt, Chapman & Scott Company, New London, Conn. The six-span bridge, 877 ft. long, carried one of the two main lines of the Maine Central between Portland and Bangor. On March 14, during the height of the flood, it was swept from its piers and the spans dropped into the river. Engineers state that it is practically undamaged and the wrecking company plans to raise it back onto its piers, with some rearrangements as to grade. Service between Portland and Bangor is now being maintained over the road's other main line via Lewiston, with shuttle freight service from Waterville and co-ordinated bus service from Winthrop serving Kennebec river points. The work of restoring the bridge will cost about $150,000.

PENNSYLVANIA-NEW YORK, CHICAGO & ST. LOUIS.—An estimate of cost of $176,700 exclusive of land and property damages, for the elimination of Big Tree road crossing of the Pennsylvania and the New York, Chicago & St. Louis in the town of Hamburg, N. Y., has been approved by the New York Public Service Commission.

Supply Trade

The Electro-Motive Corporation, LaGrange, Ill., has moved its New York office from 10 East Fortieth street to the New York Central building, 230 Park avenue.

William O. Ashe, mechanical engineer of the Commonwealth plant of the **General Steel Castings Corporation,** Granite City, Ill., has been appointed sales engineer, with the same headquarters. From 1906 to 1910, he was employed in the engineering department of the American Locomotive Company at Schenectady, N. Y., and from August, 1910, to April, 1923, was with the New York Central as draftsman, chief draftsman and assistant engineer of motive power. In April, 1923, he was appointed mechanical engineer of the Commonwealth Steel Company and continued in that capacity until 1929, when the Commonwealth Steel Company became a part of the General Steel Castings Corporation. Since then Mr. Ashe has been mechanical engineer of the Commonwealth plant at Granite City.

Safety Car Heating & Lighting Company Annual Report

The Safety Car Heating & Lighting Company for the year ended December 31, 1935, reported a profit available for dividends of $512,681 as compared with a 1934 profit of $361,186. Dividends declared during the year totaled $376,104, thus leaving $136,577 to be added to surplus. The consolidated surplus account for the year ended December 31, 1935, follows:

SURPLUS—January 1, 1935			$1,757,317.57
GROSS PROFIT FOR YEAR		$1,006,969.78	
LESS: Obsolete material written off	$106,278.30		
Reserves for Taxes	50,000.00		
Depreciation on assets acquired during 1934 and 1935	13,010.46		
Reserved for contingencies	25,000.00		
Reserved for investment in affiliated company	300,000.00	494,288.76	
NET PROFIT		$512,681.02	
DEDUCT: Dividends paid during year 1935 aggregating $4.00 per share	$394,480.00		
Less Proportion thereof applicable to Treasury Stock	18,376.00	376,104.00	136,577.02
SURPLUS—December 31, 1935			$1,893,894.59

The balance sheet as of the close of last year lists total current assets of $4,051,377, as against total current liabilities of $304,132. Cash totaled $2,049,078.

In discussing air-conditioning, President

W. L. Conwell expressed the opinion that the peak of installations has been passed and that the activity in this branch of the company's business will "probably be more or less constant from now on, depending to a great extent upon public policy." He is hopeful that the railroad situation will continue to improve and that railway buying will increase, unless recent favorable developments are offset by government subsidies to railway competitors and by the enactment of "make-work" legislation now before Congress.

General Electric Company

The forty-fourth annual report of the General Electric Company for the year ended December 31, 1935, shows net profit of $27,843,772, equivalent to 97 cents a share, compared with $19,726,044 for 1934, equivalent, after $2,575,074 of dividends on special stock, then outstanding, to 59 cents a share, on 28,845,927 shares of common stock outstanding in both years. Cash dividends of 70 cents were declared during 1935, amounting to $20,190,792. (In the first quarter of 1936 the dividend was increased to $1 annual rate.) Surplus was increased by $8,776,934 to $120,110,614.

A comparative statement of income and earned surplus follows:

	1935	1934
Net sales billed	$208,733,433	$164,797,317
Costs, expenses, and all charges (including provision for general profit sharing and extra compensation) except depreciation and interest	181,003,106	145,716,210
	$27,730,327	$19,081,107
Depreciation of plant and equipment	9,338,547	7,335,997
Net income from sales	$18,391,780	$11,745,110
Income from other sources:		
Interest and dividends from affiliated companies and miscellaneous investments	$7,537,115	$5,608,911
Income from marketable securities	1,021,589	1,339,882
Interest on bank balances and receivables	516,926	742,831
Royalties and sundry revenue	649,546	655,462
	$9,725,176	$8,347,086
Total income	$28,116,956	$20,092,196
Interest charges	273,184	366,152
Net income for the year	$27,843,772	$19,726,044
Earned surplus at beginning of year	111,333,680	117,621,616
	$139,177,452	$137,347,660
Revaluation of investments:		
Undistributed earnings of affiliates	2,755,560	
Surplus adjustments of affiliates	1,529,256	
Revaluation of securities in portfolio*		1,195,793
	$140,403,756	$136,151,867
Regular 6% dividends on special stock		2,575,074
Special stock, retired April 15, 1935:		
Accrued dividend of 15 cents a share		643,770
Premium		4,292,964
Bonds retired August 1, 1935: Premium	102,350	
Dividends on common stock	20,190,792	17,306,379
Earned surplus at end of year	$120,110,614	$111,333,680

* Carried directly to reserve for investments in 1935.

Orders received amounted to $217,361,587 during 1935, compared with $183,660,303 during 1934, an increase of 18 per cent. Sales billed amounted to $208,733,433, compared with $164,797,317, an increase of 27 per cent.

Current assets at the end of 1935 amounted to $166,965,359 (including $93,710,284 of cash and marketable securities) and current liabilities were $26,266,282. This compares with current assets of $177,269,050 (including $107,950,000 of cash and marketable securities) and current liabilities of $17,461,338 a year ago. During the year all debenture bonds and special stock were retired, requiring approximately $50,000,000. This left the company with no preferred stock, funded debt or notes payable outstanding.

OBITUARY

William Charles Peyton, president of the Standard Stoker Company, Inc., died on April 4 at his home in New York at the age of 67.

Charles B. Griffin, a representative of the Rail Joint Company, with headquarters at Chicago, died of diabetes on April 4 at the West Suburban hospital, Oak Park, Ill. (a suburb of Chicago).

William A. Forbes, vice-president of the United States Steel Corporation, died on April 7 at Doctors Hospital, New York. Mr. Forbes was born on October 26, 1876, at Stockton-on-Tees, England. He served in 1895 with Park Brothers, Pittsburgh, Pa., and later was with the National Tube Company, at McKeesport, Pa. From 1907 he was with the Illinois Steel Company, Joliet, Ill., until July, 1908, when he was transferred to the New York office of the United States Steel Corporation, and since 1918 he had been in charge of the sale of all coke by-products of the Corporation's subsidiaries. Mr. Forbes was appointed assistant to the president of the corporation in April, 1928, and later was promoted to vice-president. At the time of his death he was a member of a number of technical organizations, including the American Iron & Steel Institute.

Harry U. Hart, vice-president and chief engineer of the Canadian Westinghouse Company, Ltd., died suddenly at Hamilton, Ontario, on March 15. Mr. Hart was born at Covington, Ky., and received his education at Marietta College, Ohio, and the Massachusetts Institute of Technology. He entered the employ of the Westinghouse Electric & Manufacturing Company in 1893 as a student apprentice. In 1899, he was appointed designing electrical engineer for the French Westinghouse Company, later being appointed chief engineer and remaining for five years with that company. Mr. Hart was appointed chief engineer of the Canadian Westinghouse Company in 1905, one year after the incorporation of the Canadian company. He was appointed general manager and chief engineer in 1923 and vice-president and chief engineer in 1928.

Charles L. Strobel, Sr., formerly a prominent consulting engineer and contractor in the railroad field, died on April 4 at his home at Chicago, at the age of 83 years. Mr. Strobel was born at Cincinnati, Ohio, on October 6, 1852, and received his higher education in civil engineering at the Royal Institute of Technology at Stuttgart, Germany. He first entered railway service as a draftsman at Cincinnati, Ohio, in 1873, being appointed assistant engineer on the Cincinnati Southern (now part of the Southern) in the following year. In 1878, Mr. Strobel became connected with the Keystone Bridge Company (a subsidiary of Carnegie, Phipps & Co., Ltd., which later became the Carnegie Steel Company), serving as assistant to president and engineer at Pittsburgh, Pa., until 1885, when he was sent to Chicago as consulting engineer and agent, being appointed also consulting engineer of Carnegie, Phipps & Co., Ltd., in the following year. It was during his connection with these firms that Mr. Strobel designed the first standard sections for steel I-beams and channels and introduced Z-bars and Z-bar columns. He was also intimately connected with the construction of many large bridges and office buildings. In 1893 Mr. Strobel entered private practice as a contracting engineer, incorporating his business in 1905 under the name of the Strobel Steel Construction Company, which he served as president until 1922, when he was made chairman of the board. In 1926 he severed his connection with the firm and retired from active business.

TRADE PUBLICATIONS

ARMCO H.T.-50.—Data, including average physical properties, of Armco H.T.-50 high-tensile steel are given in a 4-page illustrated folder that is being distributed by the Armco Railroad Sales Company, Middletown, Ohio.

WROUGHT IRON IN SALT WATER SERVICES.—The A. M. Byers Company, Pittsburgh, Pa., has issued a bulletin of 16 pages that embraces a report on the use of wrought iron as piling in sea water, in structures subjected to salt spray, in brine pipes, and other services involving exposure to liquids containing appreciable quantities of sodium chloride. Space is devoted to an exposition of the reasons for the corrosion resistances of wrought iron, followed by reports on various service experiences with the use of this material under a wide variety of exposure conditions. The booklet is well illustrated.

BRAKE SHOE ENGINEERING AND RESEARCH FACILITIES.—The Sargent Research Laboratory, of the American Brake Shoe & Foundry Company, Mahwah, N. J., describes and illustrates in a four-page bulletin its laboratory at Mahwah, which is being equipped with a specially designed brake shoe testing machine with recording instruments for the testing of brake shoes at maximum train speeds of 160 m.p.h. and wheel loads equivalent to those from a car weighing 320,000 lb. Mention is also made in the folder of their new metallurgical research laboratory for chemical and physical testing and heat-treating; of the X-ray laboratory of the American Manganese Steel Company; and of the specially designed rail heat-treating furnace of the Ramapo Ajax Corporation.

Continued on next left-hand page

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—The Interstate Commerce Commission has deferred action for one year on an application by this company for authority to abandon a branch line extending from Havana, Kan., to Cedar Vale, 38.8 miles, to give persons and communities in the area an opportunity to demonstrate their ability to make the operations of the line remunerative to the railroad.

ATCHISON, TOPEKA & SANTA FE.—*Acquisition*—The Southern Kansas Stage Lines have applied to the Interstate Commerce Commission for authority to acquire control of the Western Transit Company, the Silver Star Stages, and the Central Kansas Bus Line by purchase of stock.

BANGOR & AROOSTOOK.—*Securities.*—The Interstate Commerce Commission has authorized this company to issue not more than $324,000 of consolidated refunding mortgage 4 per cent bonds and to sell as much of $537,000 of these bonds as are not required in exchange for outstanding securities. The sale price is set at not less than 106 which, if the bonds were sold about July 1, would make the annual interest cost approximately 3.483 per cent. The company has also been authorized to issue not more than 6,156 shares of $50-par common stock for purpose of converting all or part of the $324,000 of bonds.

CHICAGO GREAT WESTERN.—*Director Resigns.*—Charles A. McCulloch resigned as a director of this company at the annual meeting on April 7.

CHICAGO GREAT WESTERN.—*Abandonment.*—The trustees have applied to the Interstate Commerce Commission for authority to abandon a branch line from Gilmore, Minn., to Rollingstone, 7.46 miles.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized this company to issue $3,840,000 of 4 per cent equipment trust certificates maturing in installments until 1946. The issue represents 80 per cent of the purchase price of new freight and passenger equipment, and arrangements have been made for sale of the issue at par to the Reconstruction Finance Corporation.

CHICAGO UNION STATION.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $44,000,000 of 3¾ per cent series E first mortgage bonds, the proceeds to be used to redeem outstanding 4½ and 5 per cent bonds. The issue will mature in 1963 and will be sold to a syndicate headed by Kuhn, Loeb & Co. at 102¼, making the average annual cost 3.62 per cent. The substitution of the new bonds will save the company $395,750 annually in interest charges. The issue is guaranteed by the proprietary companies—the Burlington, the Milwaukee, the Panhandle and the Pennsylvania.

DELAWARE, LACKAWANNA & WESTERN.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has approved the transactions whereby this company purchased $3,619,000 of its series A and $1,033,000 of its series B, 4 per cent equipment trust certificates from the Reconstruction Finance Corporation at 104, and subsequently sold the series A issue at 106.097 to Brown, Harriman & Co., and the series B issue at 105.625 to the Marine Midland Trust Company; total profit to the railroad approximately $93,000.

ERIE.—*Securities.*—The Interstate Commerce Commission has authorized this company to issue $1,100,000 of 4 per cent serial collateral notes (collateral to be $750,000 of refunding and improvement mortgage bonds and equity in $38,708,800 of securities pledged with the Reconstruction Finance Corporation). The issue is to be sold to the Public Works Administration at par and the proceeds used for maintenance.

GREAT NORTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to waive the redemption privilege on $4,935,000 of its 4 per cent secured serial bonds, which were sold to the Public Works Administration and are now held by the Reconstruction Finance Corporation.

GREAT NORTHERN.—*Annual Report.*—The 1935 annual report of this company shows net income, after interest and other charges, of $7,139,860, as compared with net deficit of $1,074,480 in 1934. Selected items from the Income Account follow:

	1935	1934	Increase or Decrease
Average Mileage Operated	8,278.28	8,344.39	−66.11
RAILWAY OPERATING REVENUES	$81,188,858	$70,752,877	+$10,435,981
TOTAL OPERATING EXPENSES	50,061,214	48,610,180	+1,451,034
NET REVENUE FROM OPERATIONS	31,127,644	22,142,697	+8,984,947
Railway tax accruals	6,216,821	6,181,111	+35,710
Railway operating income	24,901,566	15,951,058	+8,950,508
Equipment rents—Net Dr.	997,612	1,381,666	−384,054
Joint facility rents—Net Dr.	420,100	467,742	−47,642
NET RAILWAY OPERATING INCOME	23,483,854	14,101,650	+9,382,204
Other income	3,816,309	4,838,177	−1,021,868
INCOME AVAILABLE FOR FIXED CHARGES	26,468,087	18,497,685	+7,970,402
Rent for leased roads	1,176	18,186	−17,010
Interest on funded debt	18,755,665	18,816,884	−61,219
TOTAL FIXED CHARGES	19,328,227	19,572,165	−243,938
NET INCOME*	$7,139,860	$1,074,480Dr.	+$8,214,340

* Does not include net losses for the year 1935, amounting to $2,283,398, of subsidiaries in which this Company holds directly or indirectly a majority of the outstanding capital stock.

LONG ISLAND.—*Annual Report.*—The 1935 annual report of this company shows net deficit, after interest and other charges, of $1,407,841, an income decline of $1,885,600, as compared with net income of $328,522 in 1934. Selected items from the income statement follow:

	1935	Comparison with 1934 Increase or Decrease
RAILWAY OPERATING REVENUES	$23,806,410	−$421,069
Maintenance of way	2,042,089	+28,702
Maintenance of equipment	4,259,158	+524,645
Transportation	11,175,593	+763,587
TOTAL OPERATING EXPENSES	18,431,358	+1,434,014
Operating ratio	77.4	+7.2
NET REVENUE FROM OPERATIONS	5,375,051	−1,855,084
Railway tax accruals	2,751,458	+155,911
Railway operating income	2,612,008	−2,013,010
Hire of equipment—Dr.	474,456	−12,387
Joint facility rents—Dr.	1,596,866	−19,149
NET RAILWAY OPERATING INCOME	540,686	−1,981,473
Non-operating income	374,025	−131,193
GROSS INCOME	914,712	−2,112,666
Rent for leased roads	60,000	.....
Interest on funded debt	2,026,030	−34,355
TOTAL DEDUCTIONS FROM GROSS INCOME	2,322,553	−227,065
NET DEFICIT	$1,407,841	+$1,885,600

LOUISIANA & NORTH WEST.—*Maclay Approved as Trustee.*—The Interstate Commerce Commission has approved the appointment by the federal court of Southern New York of Mark W. Maclay as trustee of the property of this company.

NEW YORK CENTRAL.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $40,000,000 10-year 3¾ per cent secured sinking fund bonds, $15,000,000 serial secured notes, and a five-year 3 per cent promissory note for $7,900,000. The commission also authorized the company to pledge as part of the collateral security for the bonds and notes $62,900,000 of refunding and improvement mortgage 5 per cent bonds, Series C. The sinking fund bonds are to be sold at 96¼ and the secured notes at 99¾ and the proceeds used to pay outstanding demand notes. The promissory note is to be delivered to the Securities Corporation of the New York Central in discharge of indebtedness.

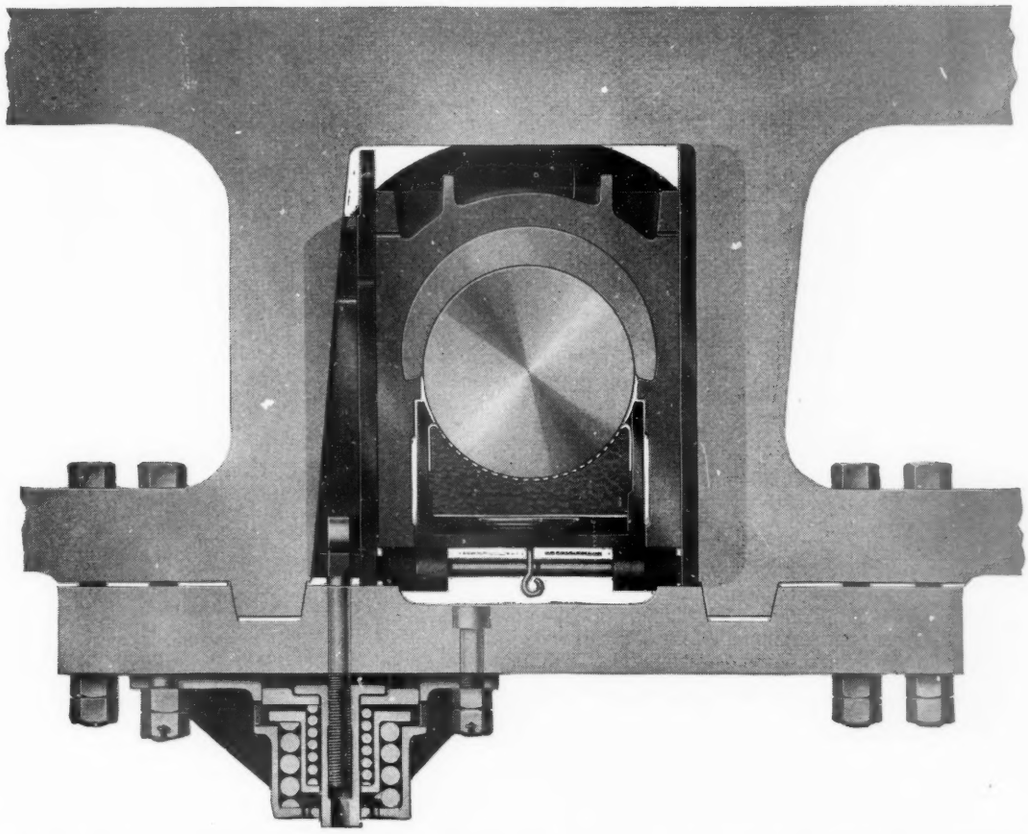
ST. LOUIS SOUTHWESTERN.—*Higher Salaries for Trustee and Counsel.*—The Interstate Commerce Commission has authorized annual compensation of $18,000 a year for Berryman Henwood, trustee of this company, and $12,000 for A. H. Kiskaddon. Previously the maxima had been set, respectively, at $15,000 and $10,800.

SOUTHERN PACIFIC.—*Annual Meeting.*—The annual meeting of this company was held on April 8 at Spring Station, Ky., presided over by Chairman Hale Holden. A total of 39,948 stockholders were present personally or by proxy and voted 2,568,391 shares of the capital stock, representing 68.1 per cent of the total.

RUTLAND.—*Annual Report.*—The 1935 annual report of this company shows net

Continued on next left-hand page

DRIVING BOX ADJUSTMENT



TAKES ON NEW IMPORTANCE

Accurate Driving Box adjustment never could be a fixed adjustment. Even with light power it was always too tight or too loose. But temperature variations were not so great on light power and a fixed adjustment "got by."

On modern power the driving box adjusting means takes on new duties. It not only must provide an easy sliding fit for the box but also must compensate for expansion due to temperature change and provide a yielding resistance for unusual shocks.

Franklin Automatic Compensator and Snubber maintains perfect driving box adjustment by automatically eliminating all air gap between the driving box and pedestals, automatically compensates for wear and automatically permitting expansion and contraction of the box without sticking or slack. It also automatically provides a yielding cushion for abnormal thrusts and softens the effect of the blow.

It safeguards against destructive shocks, saves maintenance and increases the life of the entire locomotive.

Its twin, the Radial Buffer, dampens oscillations between engine and tender, increases safety of operation, makes an easier riding locomotive and reduces the cost of maintenance.

When maintenance is required a replacement part assumes importance equal to that of the device itself and should be purchased with equal care. Use only genuine Franklin repair parts in Franklin equipment.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

deficit, after interest and other charges, of $482,982, as compared with net deficit of $375,101 in 1935. Selected items from the Income Account follow:

	1935	1934	Increase or Decrease
Average Mileage Operated	407.29	407.29	.....
Railway Operating Revenues	$3,213,311	$3,248,406	−$35,094
Maintenance of way	534,294	550,097	−15,803
Maintenance of equipment	662,648	676,666	−14,018
Transportation	1,625,680	1,558,256	+67,424
Total Operating Expenses	3,127,879	3,071,677	+56,202
Operating ratio	97.34	94.56	+2.78
Net Revenues from Operations	85,432	176,728	−91,296
Railway tax accruals	235,865	235,405	+460
Railway operating deficit	150,479	59,262	+91,216
Equipment rents—Net Cr.	14,329–Dr.	15,786	−30,116
Joint facility rents—Net Cr.	26,327	29,665	−3,337
Net Railway Operating Deficit	138,481	13,810	+124,671
Non-operating income	75,093	61,357	+13,736
Gross Income	63,388*	47,546	−110,934
Rent for leased roads	15,000	15,000	.....
Interest on funded debt	398,240	400,990	−2,750
Total Deductions from Gross Income	419,594	422,648	−3,054
Net Deficit	$482,982	$375,101	+$107,880

* Deficit.

Union Pacific.—*Bonds.*—Subject to approval by the Interstate Commerce Commission, Kuhn, Loeb & Co. has offered $26,835,000 of 3½ per cent debenture bonds of this company, due 1971, priced at 99 to yield 3.55 per cent. Proceeds will be used to redeem on July 1 at 102½ an equivalent amount of 4½ per cent bonds due in 1967. The new issue will have a sinking fund.

Dividends Declared

Clearfield & Mahoning.—$1.50, semi-annually, payable July 1 to holders of record June 20.

Elmira & Williamsport.—$1.15, semi-annually, payable May 1 to holders of record April 20.

Philadelphia & Trenton.—$2.50, quarterly, payable April 10 to holders of record March 31.

Average Prices of Stocks and of Bonds

	Apr. 7	Last week	Last year
Average price of 20 representative railway stocks..	49.06	47.50	30.80
Average price of 20 representative railway bonds..	80.95	80.28	71.73

Plugs and Receptacles for Railway Air Conditioning Service is the title of Bulletin 47, published by Albert & J. M. Anderson Mfg. Co., Boston, Mass. A large number of yard receptacles, yard plugs, car receptacles, junction boxes and a safety switch, with an interlocking yard receptacle, are described in some detail. Both photographs and dimension drawings are used as illustrations.

Railway Officers

EXECUTIVE

Samuel Spencer has been elected vice-president of the Tennessee Railroad and **L. E. Smith,** general manager at Oneida, Tenn., has been elected vice-president and general manager.

FINANCIAL, LEGAL AND ACCOUNTING

J. R. Wilkerson auditor of the Akron, Canton & Youngstown, with headquarters at Akron, Ohio, has been appointed also treasurer, to succeed the late **A. L. Graner,** treasurer and chief accounting officer. Mr. Wilkerson's appointment became effective on March 13.

The appointment of **Russell L. Dearmont** as counsel for the trustee of the Missouri Pacific, with headquarters at St. Louis, Mo., has been approved by United States District Judge George H. Moore. Mr. Dearmont, who is a member of the law firm of Dearmont, Spradling & Dalton, Cape Girardeau, Mo., and a former state senator, succeeds the late **Edward J. White.**

W. L. Linnehan, auditor of car service and station accounts of the Chicago, Rock Island & Pacific, has been appointed assistant general auditor, a new positon, in which he will continue to handle station accounts and such other matters as may be assigned to him by the general auditor. **F. J. Sindelar,** assistant auditor of car service accounts, has been promoted to auditor car service accounts, to succeed Mr. Linnehan. Headquarters of both men are at Chicago.

OPERATING

W. R. Mann, assistant superintendent of the Southern Pacific Lines in Texas and Louisiana, with headquarters at El Paso, Tex., has been transferred in the same capacity to San Antonio, Tex., succeeding **H. F. Kelley,** resigned. The position of assistant superintendent at El Paso has been abolished. **F. E. Hoefer** has been appointed trainmaster, with headquarters at Austin, Tex., succeeding **T. S. Stewart,** who has been transferred in the same capacity to El Paso.

TRAFFIC

G. L. Lucas has been appointed assistant general freight agent of the Ashley, Drew & Northern, with headquarters at Crossett, Ark.

H. W. Ward, general freight agent of the Minneapolis & St. Louis, has been appointed acting traffic manager, with headquarters as before at Minneapolis, Minn., to replace **B. F. Moffatt,** whose appointment as executive representative was noted in the *Railway Age* of April 4. **W. E. Hicks,** executive general agent, has been appointed assistant general freight agent, solicitation, with headquarters at Minneapolis. These appointments became effective on April 1.

Edward D. Snow, Jr., assistant industrial agent for the New York Central, with headquarters at New York, has been appointed industrial agent, with the same headquarters.

W. J. Brennan has been appointed general agent for the Reading and the Central of New Jersey, with headquarters at Cleveland, Ohio, succeeding **J. H. P. Hazard,** deceased.

W. G. Wagner, assistant freight traffic manager of the Chicago, Burlington & Quincy, has been appointed freight traffic manager, with headquarters as before at Chicago, to succeed **George Morton,** who has retired under the pension rules of this company after 53 years of service. **L. C. Mahoney,** assistant freight traffic manager of the Illinois-Iowa district, has been appointed assistant freight traffic manager of the system to replace Mr. Wagner. **H. L. Ford,** general freight agent in charge of solicitation, has been appointed assistant freight traffic manager in charge of solicitation and his former position has been abolished. **R. B. Battey,** coal traffic manager, has been appointed assistant freight traffic manager, with continued jurisdiction over the Coal Traffic department and with such other additional duties as may be assigned to him. The position of coal traffic manager has been abolished. **D. E. McKee,** assistant general freight agent, has been appointed general freight agent of the Illinois-Iowa district, succeeding Mr. Mahoney. **W. F. Raddell** has been appointed assistant general freight agent, to replace Mr. McKee. **G. A. Hoffelder,** assistant general freight agent (Interstate Commerce), has had his title changed to general freight agent. All these changes became effective on April 1. The headquarters of all these officers are located at Chicago.

MECHANICAL

A. C. Schroeder, production inspector in the car department of the Chicago, Milwaukee, St. Paul & Pacific, has been appointed general foreman of the freight car shop at Milwaukee, Wis. **H. A. Grophe** has been appointed assistant passenger shop superintendent at the same point.

ENGINEERING AND SIGNALING

Edward Wise, Jr., assistant division engineer on the Louisville & Nashville, with headquarters at Pensacola, Fla., has been promoted to division engineer of the Evansville division, with headquarters at Evansville, Ind., effective April 1, to succeed **L. L. Adams,** whose promotion to engineer maintenance of way was noted in the *Railway Age* of April 4, and a sketch of whom appears elsewhere in these columns. **W. G. Thompson,** assistant engineer at Mobile, Ala., has been promoted to assistant division engineer at Pensacola,

Continued on next left-hand page

to replace Mr. Wise and **R. E. Nottingham,** supervisor of track at the Nashville (Tenn.) terminals, has been appointed assistant engineer at Mobile, to succeed Mr. Thompson.

T. M. Pittman, Jr., assistant engineer on the Illinois Central, with headquarters at Water Valley, Miss., has been promoted to division engineer of the Mississippi division, with the same headquarters, succeeding **Samuel J. Holt,** whose death on March 7 was noted in the *Railway Age* of March 21. **R. H. Carter,** supervisor on the Chicago Terminal division, has been appointed acting division engineer of the same division to replace **J. J. Desmond,** who has been granted a leave of absence because of ill health. **S. C. Jump,** supervisor with headquarters at Clinton, Ill., has been appointed acting division engineer of the Springfield division, with the same headquarters, to relieve **F. W. Armistead,** who has also been granted a leave of absence because of ill health.

L. L. Adams, whose appointment as engineer maintenance of way of the Louisville & Nashville, with headquarters at Louisville, Ky., was noted in the *Railway Age* of April 4, has been connected with the L. & N. for 25 years. Mr. Adams received his higher education at Kentucky State University, graduating with a degree in civil engineering in 1911. He entered the service of the L. & N. in May of the same year as a rodman in the construction department, serving in this position and as an inspector, assistant resident engineer and resident engineer until May, 1913. At that time he entered the office of the chief engineer as a draftsman, and

L. L. Adams

after a year in this capacity he was appointed assistant engineer on maintenance, with headquarters at Nashville, Tenn. In May, 1917, Mr. Adams enlisted in the United States Army, being commissioned a captain and serving in France with the Eighty-second Division Engineers for 11 months. On July 9, 1919, he returned to the L. & N. as an assistant engineer in the chief engineer's office, being appointed headquarters supervisor in the roadmaster's office at Ravenna, Ky., on October 1 of the same year. In July, 1920, he was promoted to roadmaster, with headquarters at Etowah, Tenn., and was transferred to Louisville, Ky., on February 1, 1925. He was advanced to division engineer, with headquarters at Evansville, Ind., on July 1, 1931, which position he was holding at the time of his recent promotion to engineer maintenance of way.

SPECIAL

Thomas E. Chester has been appointed assistant general manager of hotels and bungalow camps in Western Canada for the Canadian Pacific, succeeding **A. E. Robertson,** who has resigned. Mr. Chester will have his office at Winnipeg, Man.

OBITUARY

E. L. Smith, terminal trainmaster for the Chesapeake & Ohio, with headquarters at Richmond, Va., died on April 5.

Samuel W. Hill, assistant auditor of disbursements of the Baltimore & Ohio, with headquarters at Baltimore, Md., died at his home in that city on April 5.

John F. Maguire, who retired in 1931 as general manager of the Lehigh Valley at Bethlehem, Pa., died on March 30 at Coronado, Cal., at the age of 73.

Bee H. Ledbetter, division storekeeper on the Southern with headquarters at Meridian, Miss., died at that point on April 1 after 32 years of service with this company.

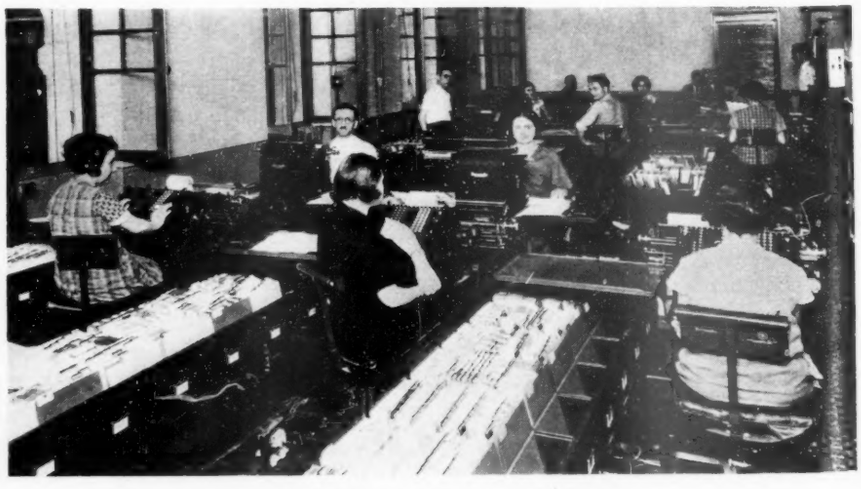
Onward Bates, formerly engineer and superintendent of bridges and buildings of the Chicago, Milwaukee, St. Paul & Pacific, died on April 4 at his winter home at Augusta, Ga. While Mr. Bates had been out of active railroad service for 35 years, he was widely known for his subsequent record as a railroad contractor and as a consulting engineer. He was born on February 24, 1850, in St. Charles County, Mo., and received his engineering education at Rensselaer Polytechnic Institute. While Mr. Bates did not finish his course at that time, he later received the honorary degrees of civil engineer from the University of Wisconsin, doctor of engineering from Rensselaer Polytechnic Institute and LL.D. from the University of Missouri.

Early in his career, Mr. Bates served in engineering capacities with various concerns. His first railway service was with the Cincinnati Southern (now part of the Southern). Subsequently he was connected with the Edge Moor Iron Works and still later with the Pittsburgh Bridge Company.

Onward Bates

In 1888 he went to the Chicago, Milwaukee, St. Paul & Pacific as engineer and superintendent of bridges and buildings, holding this position until 1901, when he left this company to assist in the organization of the Bates & Rogers Construction Company, engineering and contracting firm of Chicago, of which he became president. In 1907 Mr. Bates retired although he continued for about 10 years to devote a limited amount of time to private consulting engineering work. Mr. Bates was active in the affairs of various technical associations and was a past-president (1909) and an honorary member (1923) of the American Society of Civil Engineers, and also past-president (1899) of the Western Society of Engineers.

* * * *



Modern Railway Accounting in Algiers

Material stock records division of the Algerian Railways, showing installation of Burroughs Accounting Machines, with ledger card boxes mounted on rails which run beside the machines.

Tables of Revenues and Expenses of Railways begin on next left-hand page

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1936

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr. & retir. 1936	After depr. & retir. 1935	Before depr. & ret.
Akron, Canton & Youngstown	Feb.	171	$168,285	$41	$181,558	$25,948	$15,039	$7,882	$52,052	$110,352	60.8	$71,206	$61,119	$43,221	$43,705	$47,692
	2 mos.	171	346,061	104	368,730	52,017	32,273	16,132	106,063	224,909	61.0	143,821	123,612	88,841	96,155	97,802
Alton	Feb.	956	941,123	179,494	1,290,633	128,211	242,860	45,460	526,924	1,009,024	78.2	281,609	197,193	26,550	6,751	53,774
	2 mos.	956	1,796,458	362,250	2,495,125	246,669	452,128	89,465	1,049,182	1,967,075	78.8	528,050	373,637	46,448	—12,829	100,884
Atchison, Topeka & Santa Fe System	Feb.	13,234	7,979,165	1,162,546	10,123,450	1,359,654	2,675,227	399,614	4,089,415	8,976,950	88.7	1,146,500	229,035	192,938	—154,929	1,137,495
	2 mos.	13,234	16,820,336	2,369,898	21,106,649	2,828,467	5,548,718	803,451	8,413,297	18,523,072	87.8	2,583,577	737,307	673,545	—256,344	2,563,279
Atlanta & West Point	Feb.	93	93,334	20,404	135,766	16,797	28,612	8,130	58,110	121,358	89.4	14,408	7,173	—3,545	—10,656	7,456
	2 mos.	93	187,216	44,595	274,185	37,723	53,774	15,686	119,026	245,560	89.6	28,625	14,242	—8,105	—20,642	14,288
Western of Alabama	Feb.	133	81,617	20,364	116,989	20,475	32,351	6,914	50,001	117,768	100.7	—779	—9,131	—5,480	—12,528	10,046
	2 mos.	133	162,810	46,750	238,773	41,090	60,999	14,071	102,315	235,161	98.5	3,612	—13,762	—5,505	—25,481	25,512
Atlanta, Birmingham & Coast	Feb.	639	200,700	32,752	262,300	44,083	50,326	22,073	107,981	246,440	94.0	15,860	1,634	—15,892	—24,397	—3,222
	2 mos.	639	418,254	56,506	533,514	86,516	99,086	43,555	216,348	491,832	92.2	41,682	13,649	—17,178	—66,450	8,217
Atlantic Coast Line	Feb.	5,145	2,627,961	1,033,495	4,145,759	422,644	649,242	137,039	1,549,614	2,962,457	71.5	1,183,302	758,302	625,268	518,619	804,655
	2 mos.	5,145	5,182,224	1,751,441	7,860,235	865,856	1,396,920	286,587	3,104,078	6,063,082	77.1	1,797,153	947,153	688,824	622,076	1,048,792
Charleston & Western Carolina	Feb.	342	160,871	838	166,331	24,666	25,121	6,479	57,689	118,520	71.3	47,811	30,311	27,157	25,865	33,461
	2 mos.	342	328,426	2,310	340,132	49,597	51,984	12,679	118,646	242,204	71.2	97,928	62,928	57,907	48,600	70,515
Baltimore & Ohio	Feb.	6,439	11,402,191	811,463	12,937,099	858,448	3,125,394	369,553	4,781,511	9,787,125	75.7	3,149,974	2,462,636	2,146,274	1,799,897	2,764,965
	2 mos.	6,439	22,248,143	1,702,377	25,402,755	1,720,818	5,995,093	707,709	9,438,300	19,180,118	75.5	6,222,637	4,848,882	4,177,598	3,583,390	5,414,750
Staten Island Rapid Transit	Feb.	23	51,903	74,789	132,156	15,307	21,018	1,516	88,843	139,149	105.3	—6,993	—26,243	—44,070	—51,218	—36,653
	2 mos.	23	103,485	150,208	266,286	30,369	42,183	3,375	181,713	282,894	106.2	—16,608	—55,108	—89,313	—111,781	—74,494
Bangor & Aroostook	Feb.	603	647,413	30,968	696,588	103,102	92,158	5,221	175,617	399,530	57.4	297,058	232,833	212,642	322,372	234,729
	2 mos.	603	1,247,931	54,213	1,340,139	209,899	183,682	10,282	341,448	791,543	59.1	548,596	429,200	395,000	568,709	439,224
Bessemer & Lake Erie	Feb.	225	515,894	2,105	529,472	61,812	275,488	10,920	145,435	531,900	100.5	—2,428	—28,886	43,674	—31,397	97,756
	2 mos.	225	958,851	3,095	985,224	104,986	542,825	21,760	289,017	1,035,501	105.1	—50,277	—91,915	35,126	—125,320	143,324
Boston & Maine	Feb.	1,997	2,595,342	622,461	3,684,272	570,850	651,110	55,441	1,598,063	3,057,759	83.0	626,513	405,654	185,604	461,327	322,620
	2 mos.	1,997	5,218,356	1,203,450	7,368,367	1,114,202	1,393,758	119,203	3,225,431	6,231,110	84.6	1,137,257	694,149	284,732	545,276	558,785
Brooklyn Eastern District Term	Feb.	10.75	92,240	.....	94,307	4,177	6,651	324	28,982	45,878	48.7	48,429	39,574	40,291	25,656	.....
	2 mos.	10.75	182,314	.....	186,686	7,853	12,833	622	57,684	90,385	48.4	96,301	78,542	79,416	57,840	.....
Burlington, Rock Island	Feb.	255	48,854	4,069	57,408	11,260	11,135	3,709	38,378	71,766	125.0	—14,358	—20,756	—28,326	—24,901	—26,007
	2 mos.	255	113,093	8,456	130,864	26,168	26,355	8,149	77,312	153,012	116.9	—22,148	—34,888	—53,738	—47,876	—49,100
Cambria & Indiana	Feb.	37	118,565	.....	118,732	5,557	38,024	347	16,045	65,412	55.09	53,320	28,169	93,451	84,862	109,332
	2 mos.	37	242,460	.....	242,776	11,451	74,368	714	31,327	128,989	53.13	113,787	61,026	199,164	184,172	230,985
Canadian Pacific Lines in Maine	Feb.	233	238,203	13,497	261,534	33,724	58,697	9,463	100,593	209,521	80.1	52,013	43,570	21,272	20,466	23,315
	2 mos.	233	459,449	27,298	508,107	66,624	113,636	19,712	203,386	417,783	82.2	90,324	74,881	29,363	24,299	33,441
Canadian Pacific Lines in Vermont	Feb.	85	57,475	9,196	76,644	18,888	24,233	4,276	61,569	114,155	148.9	—37,511	—43,695	.....	.....	61,035
	2 mos.	85	121,852	18,911	160,541	35,728	50,616	8,832	122,826	228,730	142.5	—68,189	—79,373	.....	.....	—117,029
Central of Georgia	Feb.	1,926	900,701	120,332	1,165,220	163,829	262,782	51,851	525,335	1,085,186	93.1	80,034	—600	—29,422	15,337	34,735
	2 mos.	1,926	1,852,127	244,764	2,379,567	319,080	544,739	103,741	1,058,277	2,191,119	92.1	188,448	26,960	—29,770	—564	98,662
Central of New Jersey	Feb.	681	2,330,294	341,575	2,811,258	221,748	486,051	43,763	1,167,341	2,029,932	72.2	781,326	435,756	285,094	98,733	412,503
	2 mos.	681	4,481,055	672,142	5,438,244	422,192	955,806	85,855	2,301,852	3,989,970	73.4	1,448,274	828,288	543,043	288,754	797,957
Central Vermont	Feb.	455	386,877	37,632	458,738	57,516	93,730	14,273	222,923	412,997	90.0	45,741	31,559	36,206	8,817	64,320
	2 mos.	455	751,243	75,835	903,184	119,360	174,644	28,959	453,711	824,121	91.2	79,063	50,730	63,435	—35,787	120,058
Chesapeake & Ohio	Feb.	3,106	10,899,133	213,454	11,374,481	999,121	2,119,785	179,357	2,420,359	6,031,822	53.0	5,342,659	4,373,622	4,668,511	2,889,708	5,374,147
	2 mos.	3,106	20,685,839	474,582	21,699,950	2,008,359	3,962,190	358,819	4,777,291	11,733,509	54.1	9,966,441	8,032,812	8,480,213	5,550,352	9,885,608
Chicago & Eastern Illinois	Feb.	931	1,066,821	113,136	1,322,085	135,883	244,775	56,141	524,984	1,019,549	77.1	302,536	227,536	79,575	64,836	129,310
	2 mos.	931	2,128,273	226,181	2,636,765	269,958	473,633	110,144	1,047,010	2,019,600	76.6	617,165	467,165	169,394	104,150	269,288
Chicago & Illinois Midland	Feb.	131	296,445	1,822	304,748	26,013	58,037	16,309	87,732	204,407	67.1	100,341	87,018	83,707	93,171	97,344
	2 mos.	131	589,640	3,371	605,557	52,448	117,680	37,742	170,384	411,717	68.0	193,840	166,079	165,022	155,329	192,296
Chicago & North Western	Feb.	8,355	4,753,179	758,303	6,245,523	1,115,762	1,555,781	157,556	3,210,648	6,369,490	102.0	—123,967	—682,149	—960,712	—52,427	—536,501
	2 mos.	8,355	9,527,872	1,553,333	12,503,843	1,814,470	2,972,587	306,933	6,066,729	11,822,851	94.6	680,992	—424,190	—875,185	—109,444	—35,743
Chicago, Burlington & Quincy	Feb.	9,013	6,131,215	589,472	7,451,313	721,541	1,417,849	214,148	2,953,309	5,657,538	75.9	1,793,775	1,230,550	896,730	169,073	1,279,825
	2 mos.	9,013	11,997,423	1,197,545	14,661,626	1,360,499	2,790,559	422,339	5,800,779	11,076,878	75.6	3,584,748	2,460,592	1,796,035	367,301	2,561,549
Chicago Great Western	Feb.	1,512	939,165	27,763	1,048,955	260,723	229,437	52,612	589,225	1,181,850	112.7	—132,895	—190,162	—378,571	—91,116	—337,581
	2 mos.	1,512	2,093,473	79,931	2,350,882	479,565	421,691	106,301	1,175,841	2,287,328	97.3	63,554	—50,979	—406,457	—216,225	—324,481
Chicago, Indianapolis & Louisville	Feb.	572	708,243	44,214	840,569	72,324	184,245	27,448	344,541	662,691	78.8	177,878	149,942	53,577	—65,794	95,249
	2 mos.	572	1,403,722	95,833	1,677,093	135,535	361,189	55,637	687,551	1,307,725	78.0	369,368	313,251	117,826	—94,612	201,292

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Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1936—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr. & retir. 1936	After depr. & retir. 1935	Before depr. & ret.
Chicago, Milwaukee, St. Paul & Pac.	Feb.	11,123	$6,407,312	$464,829	$7,618,531	$1,120,645	$1,574,029	$184,409	$3,671,711	$6,879,037	90.3	$729,494	$177,494	—$376,116	—$32,790	$74,007
	2 mos.	11,123	13,204,576	1,023,831	15,746,716	1,900,483	3,150,688	388,151	7,041,495	13,145,029	83.5	2,601,687	1,477,687	479,062	—229,197	1,378,367
Chicago, Rock Island & Pacific	Feb.	7,574	4,062,731	530,761	5,158,597	681,517	1,321,488	184,754	2,624,467	5,202,085	100.8	—43,488	—443,728	—715,707	—464,927	—356,087
	2 mos.	7,574	8,370,072	1,153,035	10,640,563	1,223,699	2,728,992	373,451	5,177,426	10,281,326	96.6	359,237	—432,615	—942,588	—948,266	—223,199
Chicago, Rock Island & Gulf	Feb.	626	211,348	29,666	316,641	39,332	30,051	16,169	122,896	232,484	73.4	84,157	66,789	22,150	—8,853	26,217
	2 mos.	626	448,709	58,087	652,418	82,011	69,423	31,964	250,566	481,128	73.7	171,290	136,467	42,082	—27,452	50,297
Chicago, St. Paul, Minn. & Omaha	Feb.	1,647	1,090,015	105,921	1,281,520	181,352	242,828	33,120	781,705	1,316,603	102.7	—35,083	—119,535	—211,964	—22,691	—162,026
	2 mos.	1,649	2,212,611	234,202	2,627,606	306,616	488,369	67,063	1,528,525	2,547,649	97.0	79,957	—88,111	—273,798	—110,857	—173,888
Clinchfield	Feb.	309	560,481	3,965	569,464	37,818	106,422	17,327	108,649	288,187	50.6	281,277	241,748	275,202	167,393	318,808
	2 mos.	309	1,101,569	8,010	1,120,529	74,922	203,791	34,094	225,980	570,071	50.9	550,458	471,411	536,156	349,110	623,385
Colorado & Southern	Feb.	1,019	404,542	25,792	484,281	56,323	109,355	12,517	224,116	435,981	90.0	48,300	—7,518	—23,069	—30,979	8,649
	2 mos.	1,019	839,082	52,286	999,762	102,819	206,167	24,476	459,612	861,521	86.2	138,241	26,455	—7,738	—58,672	55,821
Ft. Worth & Denver City	Feb.	902	399,216	34,791	429,085	28,641	71,585	15,733	144,771	295,032	68.8	134,053	105,711	78,756	—10,080	96,651
	2 mos.	902	840,624	73,829	910,949	68,775	173,712	32,326	298,272	643,362	70.6	267,587	210,139	150,879	—687	186,568
Columbus & Greenville	Feb.	167	60,661	5,086	70,418	14,417	13,338	3,560	32,723	73,485	104.4	—3,067	—5,332	—6,126	—6,454	—3,331
	2 mos.	167	135,740	11,212	157,098	31,262	28,342	7,266	68,371	155,545	99.0	1,553	—3,286	—5,651	—20,085	—62
Delaware & Hudson	Feb.	831	2,069,819	102,486	2,242,964	240,667	468,791	43,389	862,529	1,751,513	78.1	491,451	386,656	416,207	77,661	509,974
	2 mos.	831	3,917,804	206,145	4,271,801	504,784	959,042	88,801	1,696,014	3,527,449	82.6	744,352	534,033	563,179	149,386	751,605
Delaware, Lackawanna & Western	Feb.	994	3,366,432	586,333	4,342,032	315,030	825,778	107,737	1,993,833	3,427,684	78.9	914,348	579,348	583,840	204,933	806,766
	2 mos.	994	6,280,484	1,167,776	8,265,549	591,231	1,619,196	223,310	3,940,854	6,748,588	81.6	1,516,961	847,961	839,145	520,945	1,285,034
Denver & Rio Grande Western	Feb.	2,584	1,556,187	59,880	1,699,467	135,579	514,394	46,843	622,345	1,406,479	82.8	292,988	131,459	105,665	78,018	200,937
	2 mos.	2,584	3,151,739	190,710	3,512,651	244,663	1,019,327	96,434	1,277,440	2,812,517	80.1	700,134	377,105	317,007	239,582	509,943
Denver & Salt Lake	Feb.	232	315,300	11,783	334,876	22,658	47,543	2,155	78,218	160,254	47.9	174,622	158,218	189,903	82,607	195,506
	2 mos.	232	559,184	18,097	593,483	42,253	100,500	4,359	136,900	302,585	51.0	290,898	258,174	323,571	187,668	334,547
Detroit & Mackinac	Feb.	242	28,600	3,727	36,801	6,824	10,384	1,021	23,481	45,035	122.3	—8,234	—10,643	—13,478	—5,518	—10,514
	2 mos.	242	61,645	7,393	78,741	13,193	19,681	1,895	46,571	87,884	111.6	—9,143	—13,631	—18,633	—13,616	—12,704
Detroit & Toledo Shore Line	Feb.	50	412,441	.....	413,976	18,419	26,565	7,788	97,770	157,987	38.2	255,989	215,744	146,113	121,417	151,672
	2 mos.	50	809,862	.....	813,514	35,605	52,562	15,027	186,887	304,656	37.4	508,858	427,314	293,697	246,886	304,815
Detroit, Toledo & Ironton	Feb.	472	684,813	188	696,370	54,681	77,208	10,776	158,513	320,726	46.1	375,644	303,106	264,542	459,589	286,267
	2 mos.	472	1,416,404	402	1,439,823	105,852	151,853	21,188	308,405	626,463	43.5	813,360	664,309	581,572	809,497	625,082
Duluth, Missabe & Northern	Feb.	559	83,627	1,669	102,474	99,708	204,221	3,608	141,075	492,947	481.0	—390,473	—430,452	—421,943	—360,567	—346,931
	2 mos.	559	160,354	4,796	200,509	208,220	392,537	7,612	278,337	978,100	487.8	—777,591	—857,131	—857,512	—778,329	—707,453
Duluth, Winnipeg & Pacific	Feb.	178	121,143	1,707	125,206	15,285	20,739	1,693	52,753	94,598	75.6	30,608	23,774	3,341	—5,470	6,509
	2 mos.	178	258,132	4,219	267,502	30,611	41,261	3,435	109,488	192,973	72.1	74,529	59,997	20,910	—16,126	27,262
Elgin, Joliet & Eastern	Feb.	434	1,224,118	.....	1,354,650	131,750	287,937	13,171	536,825	1,014,282	74.9	340,368	238,425	219,584	292,483	294,823
	2 mos.	434	2,455,054	.....	2,727,003	245,180	579,776	26,752	1,041,184	1,982,814	72.7	744,189	540,277	504,766	467,893	655,372
Erie	Feb.	2,297	5,815,994	420,390	6,665,028	475,799	1,264,477	164,252	2,562,958	4,767,972	71.5	1,897,056	1,525,428	1,308,857	899,426	1,633,064
	2 mos.	2,297	11,175,940	852,482	12,884,073	951,611	2,523,527	331,755	5,068,984	9,475,746	73.5	3,408,327	2,665,071	2,227,352	1,784,634	2,877,544
New Jersey & New York	Feb.	45	18,170	48,016	67,902	4,672	13,214	733	49,418	69,568	102.5	—1,666	—5,816	—21,168	—38,851	—21,157
	2 mos.	45	34,314	96,691	134,376	8,903	27,777	1,323	101,695	142,720	106.2	—8,344	—16,644	—47,885	—76,276	—47,863
New York, Susquehanna & Western	Feb.	215	332,373	24,272	371,113	24,897	37,861	4,827	156,391	238,468	64.3	132,645	111,045	87,167	15,176	93,034
	2 mos.	215	624,262	48,212	700,893	48,401	77,829	9,738	299,756	463,251	66.1	237,642	194,442	145,923	60,703	157,740
Florida East Coast	Feb.	712	523,547	453,494	1,082,875	93,187	125,623	24,386	317,010	626,051	57.8	456,824	385,794	345,282	196,594	402,652
	2 mos.	712	1,014,585	719,769	1,944,218	193,820	269,798	49,752	597,770	1,239,103	63.7	705,115	563,777	492,082	197,041	606,823
Fort Smith & Western	Feb.	249	64,992	681	68,702	13,789	8,408	5,128	20,640	51,750	75.3	16,952	15,152	9,022	—5,913	9,591
	2 mos.	249	134,114	1,500	142,780	27,586	18,276	10,270	41,550	105,329	73.8	37,451	33,851	20,971	—385	22,109
Georgia Railroad	Feb.	329	231,031	10,966	263,020	23,163	54,734	16,910	117,106	225,042	85.6	37,978	29,933	39,978	32,150	51,557
	2 mos.	329	459,868	24,505	527,493	48,274	114,095	34,129	243,851	467,602	88.7	59,891	47,346	69,087	57,453	92,246
Georgia & Florida	Feb.	408	77,160	1,723	82,625	18,874	18,287	8,197	33,496	84,539	102.3	—1,914	—7,223	—9,267	—9,185	—4,059
	2 mos.	408	150,701	3,824	161,930	38,474	35,083	16,353	66,880	168,221	103.9	—6,291	—16,904	—19,712	—23,962	—9,278
Grand Trunk Western	Feb.	1,032	1,561,618	78,886	1,768,121	173,221	343,521	33,072	799,721	1,437,445	81.3	330,676	243,564	183,438	96,132	270,046
	2 mos.	1,032	3,237,684	155,981	3,676,869	336,341	705,227	67,002	1,569,702	2,851,745	77.6	825,124	650,545	523,500	200,813	697,290
Canadian Nat'l Lines in New Eng.	Feb.	172	86,363	6,582	101,633	32,537	22,061	2,263	64,250	128,523	126.5	—26,890	—39,773	—64,368	—50,146	—61,233
	2 mos.	172	171,046	12,394	200,030	56,299	47,352	4,575	122,852	247,942	123.9	—47,912	—73,528	—124,016	—125,570	—118,589
Great Northern	Feb.	8,250	3,656,155	297,716	4,376,679	549,195	1,151,232	152,820	2,320,140	4,427,018	101.2	—50,339	—369,630	—395,222	79,905	—84,999
	2 mos.	8,250	7,618,389	687,239	9,166,158	1,010,127	2,210,893	319,368	4,500,549	8,573,357	93.5	592,801	—277,923	—305,016	—284,854	309,113

Revenues and Expenses of Railways

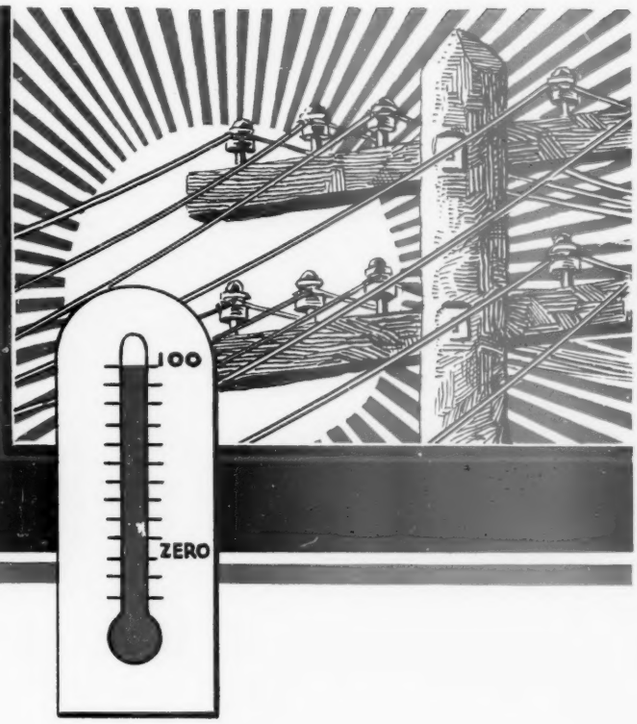
Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr. & retir. 1936	1935	Before depr. & ret.
Great Northern	Feb.	8,250	3,656,155	297,716	4,376,679	549,195	1,151,232	152,820	2,320,140	4,427,018	101.2	—50,339	—369,630	—395,222	79,905	—84,999
	2 mos.	8,250	7,618,389	687,239	9,166,158	1,010,127	2,210,893	319,368	4,500,549	8,573,357	93.5	592,801	—277,923	—305,016	—284,854	309,113
Green Bay & Western	Feb.	234	$120,442	$711	$125,559	$26,718	$16,345	$5,395	$47,421	$99,904	79.5	$25,655	$18,330	$12,774	$12,407	$16,978
	2 mos.	234	241,410	1,488	251,287	53,461	31,209	11,443	93,435	198,048	78.8	53,239	39,390	27,799	20,152	36,214
Gulf & Ship Island	Feb.	259	78,470	7,976	100,941	18,991	12,432	3,325	52,789	94,342	93.5	6,599	—7,188	—15,759	—3,576	—12,032
	2 mos.	259	159,205	14,088	197,922	36,738	28,263	7,060	107,321	191,800	96.9	6,122	—21,469	—38,679	—33,921	—31,314
Gulf, Mobile & Northern	Feb.	936	463,752	22,438	508,113	63,097	84,181	34,081	148,790	359,176	70.69	148,937	113,158	61,643	14,983	80,626
	2 mos.	936	963,115	43,117	1,049,167	129,369	177,679	68,525	303,850	737,963	70.34	311,204	242,425	133,615	13,752	171,568
Illinois Central	Feb.	4,976	6,587,652	769,093	7,901,366	724,348	1,630,414	225,396	3,251,949	6,244,136	79.0	1,657,230	1,140,720	1,013,050	953,091	1,566,000
	2 mos.	4,978	13,032,910	1,562,520	15,697,373	1,318,301	3,297,323	479,823	6,418,638	12,341,097	78.6	3,356,276	2,330,391	2,020,828	1,626,294	3,129,408
Yazzo & Mississippi Valley	Feb.	1,619	929,859	58,642	1,070,138	88,993	165,385	32,870	439,229	779,648	72.9	290,490	171,292	90,170	—57,269	131,461
	2 mos.	1,619	1,789,474	118,028	2,058,856	177,486	340,668	69,812	906,208	1,604,027	77.9	454,829	214,148	51,175	—155,132	134,328
Illinois Central System	Feb.	6,596	7,517,511	827,735	8,971,504	813,341	1,795,799	258,266	3,691,178	7,023,784	78.3	1,947,720	1,310,776	1,111,120	903,109	1,705,361
	2 mos.	6,598	14,822,384	1,680,548	17,756,229	1,495,787	3,637,991	549,635	7,324,846	13,945,124	78.5	3,811,105	2,540,479	2,084,903	1,487,949	3,276,636
Illinois Terminal	Feb.	519	378,227	74,447	485,903	38,806	65,499	15,245	169,216	307,548	63.29	178,355	148,227	129,884	76,911	148,843
	2 mos.	519	761,013	142,148	970,572	80,749	130,283	31,504	338,648	618,890	63.77	351,682	291,715	255,552	138,800	293,473
Kansas City Southern	Feb.	878	835,136	13,713	951,680	79,849	147,143	46,363	292,316	629,706	66.2	321,974	246,974	205,118	47,826	233,500
	2 mos.	878	1,685,965	30,297	1,912,468	159,170	302,477	94,254	583,913	1,275,253	66.7	637,215	487,215	392,132	64,223	448,921
Kansas, Oklahoma & Gulf	Feb.	326	178,714	489	181,648	11,844	19,664	7,533	39,700	86,128	47.4	95,520	81,516	67,783	36,810	69,869
	2 mos.	326	378,506	1,013	384,679	23,725	45,301	15,435	81,140	181,139	47.1	203,540	175,406	147,298	94,783	151,470
Lake Superior & Ishpeming	Feb.	160	31,539	106	33,564	19,832	28,603	505	22,981	77,684	231.5	—44,120	—59,057	—60,456	—52,431	—47,207
	2 mos.	160	69,070	195	73,556	41,666	57,028	1,100	46,582	158,278	215.2	—84,722	—114,077	—117,348	—107,545	—90,790
Lehigh & Hudson River	Feb.	96	133,228	103	133,915	10,674	19,848	3,345	52,601	92,969	69.4	40,946	28,615	15,543	14,391	19,339
	2 mos.	96	254,730	211	256,137	20,798	40,147	6,652	102,152	182,853	71.4	73,284	50,651	25,090	33,157	32,671
Lehigh & New England	Feb.	219	386,135	348	388,374	36,068	72,415	6,356	129,406	259,433	66.8	128,941	107,163	105,489	45,974	123,651
	2 mos.	219	694,184	692	698,656	67,894	143,427	12,477	247,655	502,400	71.9	196,256	162,336	160,186	121,903	196,509
Lehigh Valley	Feb.	1,336	3,611,696	237,436	4,093,969	310,471	723,256	109,708	1,931,311	3,236,469	79.1	857,500	654,573	486,689	432,607	679,641
	2 mos.	1,336	6,997,618	463,811	7,958,459	560,976	1,395,260	221,292	3,715,810	6,221,355	78.2	1,737,104	1,331,375	973,082	1,036,674	1,358,423
Louisiana & Arkansas	Feb.	606	387,158	8,092	410,374	46,432	60,211	27,481	110,292	261,724	63.8	148,650	104,115	89,623	63,533	103,978
	2 mos.	606	795,634	16,537	844,982	93,876	120,997	57,379	228,954	537,427	63.6	307,555	231,145	199,343	116,257	228,059
Louisiana, Arkansas & Texas	Feb.	255	80,636	175	84,934	21,167	8,758	4,732	30,238	69,505	81.8	15,429	11,733	—2,249	—4,424	—1,524
	2 mos.	255	167,659	345	174,475	40,093	17,436	9,181	59,205	135,036	77.4	39,439	33,256	5,714	—10,071	7,163
Louisville & Nashville	Feb.	5,009	6,234,254	519,667	7,230,276	708,343	1,704,982	184,019	2,471,411	5,393,137	74.6	1,837,139	1,285,924	1,400,105	971,995	1,748,217
	2 mos.	5,009	12,333,113	1,045,021	14,368,955	1,439,651	3,389,804	381,884	5,026,770	10,885,367	75.8	3,483,588	2,519,873	2,689,947	1,999,231	3,386,540
Maine Central	Feb.	1,046	921,377	77,547	1,081,337	177,558	177,526	7,969	413,272	815,141	75.4	266,196	211,281	132,838	159,213	177,470
	2 mos.	1,046	1,758,253	163,641	2,098,293	350,900	409,141	18,541	835,531	1,693,235	80.7	405,058	295,731	152,771	135,723	242,097
Midland Valley	Feb.	361	132,945	9	134,583	8,144	10,750	2,219	30,912	58,125	43.2	76,458	67,486	57,853	26,784	59,979
	2 mos.	361	276,578	53	279,701	17,052	18,863	4,691	63,022	116,294	41.6	163,407	148,101	127,929	70,060	132,164
Minneapolis & St. Louis	Feb.	1,624	481,142	6,403	521,503	100,186	119,920	32,947	302,127	592,746	113.7	—71,243	—104,663	—154,015	—40,747	—124,769
	2 mos.	1,624	1,084,179	22,068	1,172,714	151,877	241,827	68,099	619,959	1,156,577	98.6	16,137	—45,605	—127,399	—137,040	—68,865
Minneapolis, St. Paul & S. S. Marie	Feb.	4,296	1,414,667	75,998	1,629,817	301,063	360,106	56,354	951,146	1,775,550	108.9	—145,733	—285,793	—408,173	—326,817	—305,8 7
	2 mos.	4,296	2,981,707	150,360	3,401,897	542,484	692,128	112,812	1,835,587	3,398,984	99.9	2,913	—271,223	—509,719	—660,469	—305,059
Duluth, South Shore & Atlantic	Feb.	550	140,453	7,693	159,659	27,377	33,012	4,143	83,060	152,758	95.7	6,901	—2,266	—6,597	—11,277	1,206
	2 mos.	550	277,756	19,457	318,900	56,127	66,316	8,466	163,801	304,701	95.5	14,199	—3,199	—14,539	—51,333	1,112
Spokane International	Feb.	163	40,014	1,287	47,406	8,294	5,418	1,812	20,980	40,487	85.4	6,919	3,095	—340	—5,115	732
	2 mos.	163	81,626	3,024	95,975	16,154	10,815	3,629	41,155	79,714	83.1	16,261	8,605	3,252	—17,866	5,356
Mississippi Central	Feb.	150	59,200	1,356	63,011	10,987	11,349	6,830	19,402	53,869	85.5	9,142	6,277	2,813	—7,375	5,049
	2 mos.	150	119,881	2,946	127,314	22,013	21,480	13,552	39,123	106,940	84.0	20,374	14,638	8,539	—11,894	13,012
Missouri-Arkansas	Feb.	364	60,916	1,226	68,543	17,334	10,110	3,765	25,224	60,497	99.3	8,046	6,527	—1,027	.....	—193
	2 mos.	364	124,984	2,472	139,630	33,780	20,147	9,122	53,935	125,844	90.1	13,786	10,699	—3,778	.....	—2,101
Missouri-Illinois	Feb.	208	65,322	551	67,409	12,760	10,878	2,230	27,861	58,655	87.0	8,754	3,030	—5,046	4,533	—1,671
	2 mos.	208	146,770	1,153	151,198	24,645	23,154	4,533	57,469	119,751	79.2	31,447	20,517	4,703	8,564	11,454
Missouri-Kansas-Texas Line	Feb.	3,293	1,850,530	144,058	2,197,168	270,643	439,144	113,360	866,818	1,824,302	83.0	372,866	220,131	25,463	—159,238	132,546
	2 mos.	3,293	3,833,199	311,077	4,562,817	555,602	894,418	226,491	1,788,033	3,741,323	82.0	821,494	518,566	121,617	—473,475	335,778
Missouri Pacific	Feb.	7,228	6,029,994	373,241	6,963,152	699,884	1,364,269	224,837	2,719,605	5,311,905	76.3	1,651,247	1,256,644	753,579	172,990	1,104,747
	2 mos.	7,228	12,014,297	749,772	13,868,756	1,412,290	2,701,385	464,797	5,398,307	10,575,299	76.3	3,293,457	2,550,399	1,575,250	273,999	2,277,680
Gulf Coast Lines	Feb.	1,763	1,097,393	32,449	1,181,820	149,002	187,165	43,441	336,775	763,068	64.57	418,752	363,388	222,268	79,669	.....
	2 mos.	1,763	2,170,702	63,728	2,338,931	301,797	367,087	85,671	670,300	1,517,884	64.90	821,047	716,055	442,005	311,543	.....

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1936—CONTINUED

Continued on second left-hand page

THERE'S A SIGNAL



IRRESPECTIVE of weather conditions, trains have signal protection in territories equipped with "Union" Coded Track Circuits. The first installation, in service March 12, 1933, has operated over three years without a failure. There are more than 450 track-miles of main line in service over which some of the heaviest traffic in the Nation is handled.

These installations are immune to train delays from signal outages from broken line wires caused by sleet and extreme weather conditions. Increased safety from the use of "Union" Coded Track Circuits plus the fact that trains may be moved by signal indication if the dispatcher's wires are down or out, removes one burden from the operating officer's heavy load when confronted with emergency conditions. » » »

This system meets with favor because maintenance costs are reduced; emergency crews can be used for other purposes; less material is required; foreign current, relay and broken rail protection are provided and the reliability of the system assured. Damage caused to line circuits and line control equipment because of lightning is eliminated. » »

"Union" Coded Track Circuits may be used for wayside signals. If added protection and flexibility of operation from the use of cab signals is desired, it is a simple step to install the locomotive equipment, particularly in territories fed by a. c. power. This system may be applied in steam or electric propulsion territory, and may be used where track circuit energy is direct current, alternating current or a combination of both. Our nearest district office can furnish you detailed information. » »

Union Switch & Signal Co.

SWISSVALE, PA.

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1936—CONTINUED

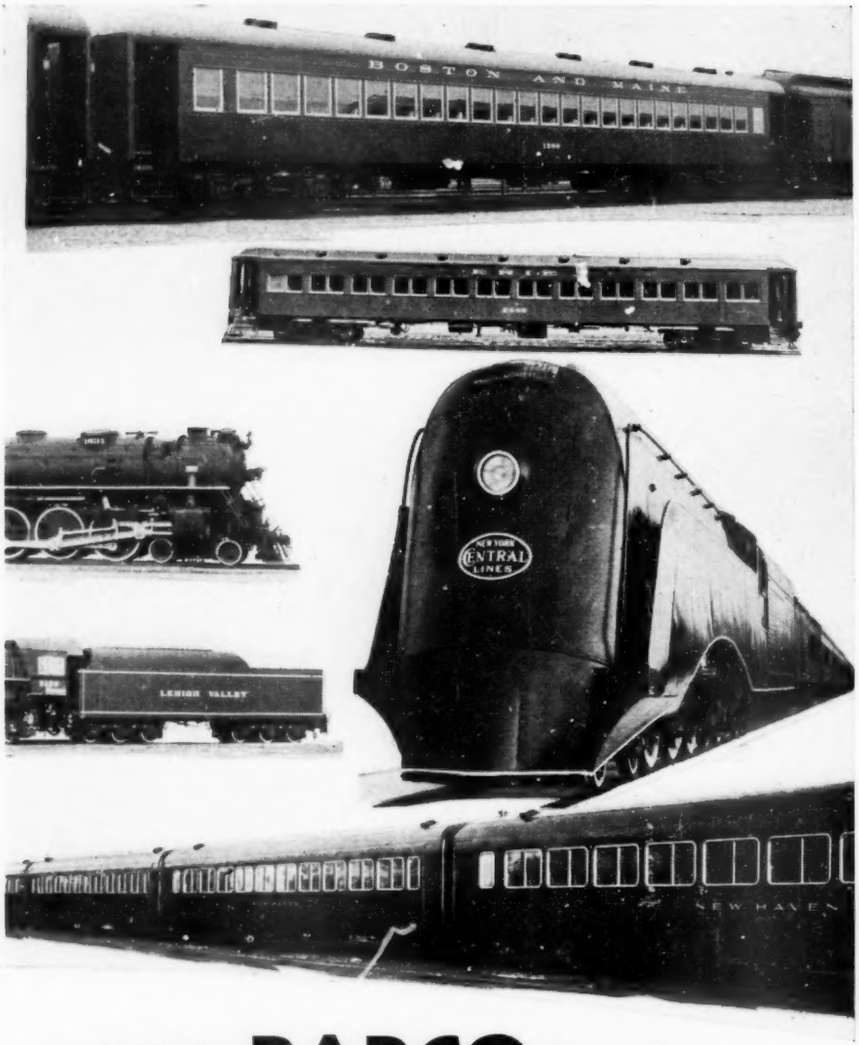
Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr.& retir. 1936	After depr.& retir. 1935	Before depr.& ret.
International Great Northern	Feb.	1,154	$728,354	$67,711	$889,145	$131,963	$197 42	$28,982	$377,896	$788,689	88.70	$100,456	$56,403	—$27,772	$55,104	$2,552
	2 mos.	1,154	1,518,836	125,764	1,836,038	265,279	393,232	61,165	771,536	1,598,141	87.03	237,897	157,132	—13,359	88,126	47,214
Mobile & Ohio	Feb.	1,201	647,533	22,067	711,905	97,571	148,322	39,689	293,463	618,843	87.0	93,062	57,322	8,622	—31,479	60,060
	2 mos.	1,201	1,296,880	47,557	1,436,263	191,394	292,004	83,490	591,396	1,239,373	86.3	196,890	125,577	22,396	—127,987	125,105
Monongahela	Feb.	174	518,605	1,164	521,379	29,113	30,071	405	108,533	171,167	32.8	350,212	330,453	241,418	105,417	247,403
	2 mos.	174	873,223	2,182	879,751	59,884	61,693	825	199,140	328,204	37.3	551,547	512,128	334,619	188,506	346,694
Montour	Feb.	57	166,005	.....	167,604	8,950	39,286	995	46,478	102,048	60.9	65,556	49,167	67,201	56,669	78,131
	2 mos.	57	341,073	.....	344,963	17,996	78,226	1,932	94,974	206,255	59.8	138,708	106,005	136,064	114,803	157,924
Nashville, Chattanooga & St. Louis	Feb.	1,154	810,053	97,697	1,023,607	125,404	241,992	59,514	453,005	948,185	92.6	75,422	30,051	22,630	—1,880	67,685
	2 mos.	1,154	1,634,216	204,027	2,092,167	233,912	485,912	138,436	921,875	1,914,466	91.5	177,701	87,300	59,790	9,991	148,832
Nevada Northern	Feb.	165	38,364	1,190	44,429	8,146	3,055	777	9,712	25,564	57.5	18,865	10,999	13,702	2,736	19,652
	2 mos.	165	80,296	2,189	92,200	16,366	6,983	1,713	20,146	53,021	57.5	39,179	24,446	29,822	—1,890	41,722
New York Central	Feb.	11,214	20,279,716	4,858,606	27,986,471	2,692,168	6,228,992	507,758	11,178,333	22,115,299	79.0	5,871,172	4,088,068	2,718,738	2,036,882	4,069,008
	2 mos.	11,214	40,032,996	10,376,830	56,192,221	5,268,071	12,528,456	1,033,617	22,055,806	43,913,705	78.1	12,278,516	8,270,460	5,377,669	4,511,840	8,074,682
Pittsburgh & Lake Erie	Feb.	233	1,435,564	61,946	1,528,297	99,050	468,843	26,801	538,456	1,214,693	79.5	313,604	186,089	363,685	302,959	513,800
	2 mos.	233	2,726,049	121,655	2,912,042	196,367	994,676	53,243	1,062,884	2,470,999	84.9	441,043	207,168	554,944	550,180	855,532
New York, Chicago & St. Louis	Feb.	1,704	3,004,695	57,698	3,174,339	219,510	466,327	118,169	1,166,505	2,093,481	66.0	1,080,858	934,847	632,363	498,722	757,761
	2 mos.	1,704	5,959,391	134,691	6,314,283	464,419	943,325	231,953	2,295,958	4,189,424	66.3	2,124,859	1,832,987	1,276,032	1,002,890	1,534,603
New York, New Haven & Hartford	Feb.	2,061	3,521,097	2,082,648	6,317,990	702,791	1,102,705	78,347	2,429,177	4,725,373	74.8	1,592,617	1,197,617	623,625	679,385	908,588
	2 mos.	2,061	6,995,442	4,106,325	12,506,912	1,384,148	2,209,336	168,399	4,861,529	9,458,281	75.6	3,048,631	2,258,631	1,132,726	1,136,898	1,702,624
New York Connecting	Feb.	20	237,993	.....	248,779	5,331	5,869	.....	32,577	44,819	18.0	203,960	169,830	137,099	131,301	137,099
	2 mos.	20	466,119	.....	483,005	15,129	11,995	.....	61,793	92,014	19.1	320,991	322,761	258,940	241,407	258,940
New York, Ontario & Western	Feb.	566	705,001	9,446	766,634	85,424	147,930	11,098	373,076	646,072	84.3	120,562	83,278	53,546	92,872	78,349
	2 mos.	566	1,474,535	16,086	1,605,176	158,681	288,039	21,038	748,852	1,275,070	79.4	330,106	255,822	187,390	250,190	237,010
Norfolk & Western	Feb.	2,166	6,664,914	149,022	7,024,527	748,748	1,053,705	133,408	1,679,948	3,834,504	54.6	3,190,023	2,388,925	2,616,573	1,824,542	2,989,635
	2 mos.	2,166	13,118,062	319,658	13,849,831	1,512,557	2,145,704	247,836	3,371,272	7,718,297	55.7	6,131,534	4,528,026	4,972,523	3,145,505	5,718,807
Norfolk Southern	Feb.	834	291,480	4,983	313,938	60,553	49,457	22,390	127,971	280,222	89.3	33,716	8,939	—2,401	—2,548	8,686
	2 mos.	834	585,554	11,648	630,344	123,573	98,788	44,965	259,131	567,236	90.0	63,108	13,524	—7,410	—19,830	14,354
Northern Pacific	Feb.	6,727	3,038,945	247,270	3,657,478	413,435	1,021,112	139,454	1,882,313	3,755,174	102.7	—97,696	—561,539	—218,354	—94,976	44,718
	2 mos.	6,727	6,277,943	554,834	7,586,841	821,851	2,077,531	281,648	3,743,188	7,572,926	99.8	13,915	—929,958	—273,755	—477,201	245,803
Northwestern Pacific	Feb.	351	165,916	57,996	243,311	41,583	51,837	3,747	141,047	252,043	103.6	—8,732	—17,569	—23,715	—46,848	—9,283
	2 mos.	351	349,353	122,601	518,545	81,959	100,509	7,480	299,557	516,534	99.6	2,011	—15,603	—26,490	—106,633	2,382
Oklahoma City-Ada-Atoka	Feb.	132	34,544	378	36,866	3,682	922	709	10,785	17,634	47.8	19,232	16,965	11,379	5,729	11,387
	2 mos.	132	70,383	761	75,205	7,087	2,039	1,605	19,153	33,061	44.0	42,144	37,678	32,791	14,412	32,806
Pennsylvania	Feb.	10,442	25,303,139	5,454,870	33,595,745	3,399,354	7,416,749	614,681	13,060,201	26,359,796	78.5	7,235,949	5,403,310	4,684,243	4,894,161	6,370,955
	2 mos.	10,442	49,313,536	11,595,261	66,516,981	6,654,763	14,194,546	1,222,195	25,554,178	51,434,733	77.3	15,082,248	11,449,969	10,018,454	9,756,771	13,481,798
Long Island	Feb.	396	571,200	1,292,966	1,947,644	155,188	351,098	14,537	1,025,769	1,605,450	82.4	342,194	213,934	63,244	—15,427	161,902
	2 mos.	396	1,061,058	2,566,337	3,782,998	329,946	726,550	36,127	2,045,592	3,259,619	86.2	523,379	266,190	—42,591	—185,679	155,486
Pennsylvania Reading Seashore Lines	Feb.	412	316,704	113,864	449,329	79,740	75,349	6,536	266,627	456,184	101.5	—6,855	—72,756	—141,050	—188,283	—133,757
	2 mos.	412	566,397	209,303	810,419	145,595	140,228	12,285	524,700	878,389	108.4	—67,970	—199,792	—338,636	—480,335	—324,050
Pere Marquette	Feb.	2,115	2,251,686	68,094	2,424,293	298,804	542,685	62,559	1,017,170	2,012,749	83.0	411,544	297,265	292,020	419,067	504,287
	2 mos.	2,115	4,590,630	160,911	4,972,285	556,869	1,081,323	126,333	1,992,237	3,943,626	79.3	1,028,659	800,620	643,318	735,556	1,067,812
Pittsburg & Shawmut	Feb.	103	71,916	428	73,318	11,440	22,876	1,556	21,715	61,689	84.1	11,629	11,121	8,171	9,012	13,982
	2 mos.	103	120,479	929	123,449	20,914	36,887	3,048	38,532	106,938	86.6	16,511	15,574	12,981	18,257	24,603
Pittsburgh & West Virginia	Feb.	138	260,419	.....	277,516	23,279	67,923	15,438	61,154	189,535	68.3	87,981	66,141	106,727	79,859	129,243
	2 mos.	138	521,882	.....	557,994	46,564	131,382	30,888	122,094	375,289	67.3	182,705	139,140	208,218	160,190	253,337
Pittsburg, Shawmut & Northern	Feb.	190	102,467	73	104,168	13,123	16,809	1,315	36,949	74,842	71.8	29,326	27,085	18,904	—6,299	21,513
	2 mos.	190	183,287	157	186,602	25,949	34,785	2,721	72,142	148,711	79.7	37,891	33,355	19,115	—10,148	24,424
Reading	Feb.	1,456	4,731,575	335,818	5,276,807	460,880	851,966	72,442	2,133,996	3,747,672	71.0	1,529,135	1,172,472	1,192,278	972,834	1,458,762
	2 mos.	1,456	9,002,066	678,540	10,102,298	825,241	1,684,526	148,227	4,088,124	7,211,890	71.4	2,890,408	2,187,145	2,234,112	1,860,677	2,768,812
Richmond, Fredericksburg & Potomac	Feb.	117	287,980	250,094	670,846	47,336	130,466	9,280	280,594	518,608	77.3	152,238	117,668	69,966	41,669	96,762
	2 mos.	117	558,984	475,095	1,274,532	117,075	254,932	18,966	550,192	1,040,814	81.7	233,718	171,397	73,580	42,611	127,162
Rutland	Feb.	407	172,257	31,194	249,069	37,590	52,528	9,195	144,176	256,736	103.1	—7,667	—20,377	—17,529	—13,790	—6,091
	2 mos.	407	330,568	63,212	489,828	76,976	110,439	19,490	284,853	519,715	106.1	—29,887	—55,583	—48,735	—52,025	—25,814
St. Louis-San Francisco	Feb.	4,928	2,827,464	224,674	3,362,368	496,749	862,087	111,661	1,329,905	2,973,814	88.4	388,554	140,917	198,829	—35,949	468,164
	2 mos.	4,928	5,918,977	474,382	7,016,212	1,011,949	1,718,382	219,075	2,708,960	5,998,111	85.5	1,018,101	524,066	616,440	—122,267	1,155,082

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1936—CONTINUED

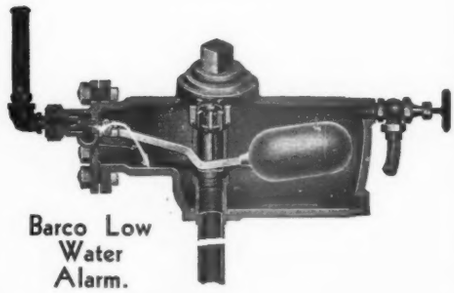
Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr. & retir. 1936	After depr. & retir. 1935	Before depr. & ret.
Ft. Worth & Rio Grande	Feb.	233	$27,368	$604	$34,590	$15,506	$6,916	$2,256	$24,560	$52,736	152.5	—$18,146	—$22,178	—$28,732	—$26,672	—$28,681
	2 mos.	233	59,624	1,366	74,262	31,503	16,168	4,973	49,549	109,157	147.0	—34,895	—42,288	—56,073	—57,961	—55,971
St. Louis, San Francisco & Texas	Feb.	261	79,135	402	83,372	38,970	13,067	5,722	41,925	107,396	128.8	—24,024	—28,262	—58,862	—50,450	—58,697
	2 mos.	261	164,858	1,136	173,830	81,005	25,382	10,822	86,745	219,039	126.0	—45,209	—53,151	—115,087	—106,143	—114,756
St. Louis Southwestern Lines	Feb.	1,784	1,390,594	14,234	1,457,488	138,727	212,138	72,260	469,251	961,975	66.0	495,513	421,509	263,425	180,175	314,116
	2 mos.	1,784	2,695,701	31,742	2,833,453	264,749	437,915	150,804	932,871	1,923,728	67.9	909,725	761,706	470,497	389,045	571,690
Seaboard Air Line	Feb.	4,307	2,263,857	537,844	3,123,440	422,993	646,713	153,275	1,222,828	2,643,177	84.6	480,263	210,263	89,099	76,233	245,699
	2 mos.	4,307	4,615,206	1,080,466	6,317,179	879,990	1,328,110	305,205	2,470,412	5,381,739	85.2	935,440	395,440	152,681	127,792	465,886
Southern Railway	Feb.	6,641	5,865,581	700,378	7,162,800	950,745	1,311,716	152,083	2,768,448	5,479,972	76.5	1,682,828	1,234,651	938,252	842,049	1,208,956
	2 mos.	6,641	11,928,484	1,497,883	14,671,572	1,874,390	2,637,969	302,206	5,529,743	10,945,202	74.6	3,726,370	2,820,005	2,272,559	1,610,146	2,813,998
Alabama Great Southern	Feb.	315	396,311	39,884	469,905	82,195	107,329	11,220	156,945	376,124	88.0	93,781	58,624	37,976	1,364	61,212
	2 mos.	315	763,451	83,131	915,830	158,789	198,664	23,086	311,875	729,918	79.7	185,912	118,279	82,756	2,242	129,233
Cinn., New Orleans & Texas Pac.	Feb.	336	1,076,865	130,528	1,278,855	171,376	218,532	24,894	332,297	797,319	62.3	481,536	394,267	376,794	209,021	426,727
	2 mos.	336	2,068,869	270,611	2,482,046	337,299	438,466	48,982	661,729	1,585,050	63.9	896,996	722,897	688,395	443,830	788,265
Georgia Southern & Florida	Feb.	397	104,358	72,262	198,647	31,428	36,189	1,849	89,220	167,709	84.4	30,938	18,342	7,786	—6,741	14,850
	2 mos.	397	212,202	144,725	399,733	61,335	71,004	3,698	179,970	333,466	83.4	66,267	41,186	30,839	—13,793	44,965
New Orleans & Northeastern	Feb.	204	175,662	16,886	206,718	34,147	32,590	5,443	70,489	153,293	74.2	53,425	31,168	10,545	—1,020	16,603
	2 mos.	204	330,957	32,453	392,493	60,681	73,073	11,191	139,342	305,170	77.7	87,323	43,015	4,432	—13,506	16,548
Northern Alabama	Feb.	100	55,327	1,589	58,611	10,653	1,452	1,100	18,946	33,822	57.7	24,789	20,778	8,896	4,947	8,966
	2 mos.	100	113,310	3,300	120,162	20,503	2,814	2,140	36,937	65,856	54.8	54,306	46,339	22,311	1,845	22,452
Southern Pacific	Feb.	8,772	7,889,030	1,435,567	10,111,002	1,126,574	1,877,938	287,058	3,809,170	7,874,977	77.9	2,236,025	1,425,233	998,708	818,430	1,482,679
	2 mos.	8,774	15,576,682	3,103,979	20,288,477	2,214,134	3,818,838	572,152	7,926,682	16,131,523	79.5	4,156,954	2,539,167	1,687,097	1,227,683	2,653,447
Southern Pacific Steamship Lines	Feb.	....	378,533	16,623	409,045	13,235	89,388	17,058	319,591	458,008	112.0	—48,963	—51,422	—51,673	—61,239	—16,325
	2 mos.	....	744,149	26,819	802,908	29,816	178,345	34,306	636,006	915,351	114.0	—112,443	—117,394	—117,897	—172,374	—47,246
Texas & New Orleans	Feb.	4,429	2,535,513	248,084	3,006,789	402,697	580,606	126,913	1,079,127	2,413,655	80.3	593,134	370,708	174,487	88,773	314,128
	2 mos.	4,429	5,171,251	485,814	6,120,021	833,009	1,200,146	241,178	2,183,697	4,904,176	80.1	1,215,845	790,973	412,276	165,958	695,652
Spokane, Portland & Seattle	Feb.	946	411,916	28,330	482,050	60,496	78,602	7,065	229,618	401,803	83.4	80,247	12,508	—37,734	—8,925	—21,221
	2 mos.	946	861,097	62,563	1,010,199	121,947	153,846	14,553	448,531	792,089	78.4	218,110	85,205	—16,118	—8,576	16,936
Tennessee Central	Feb.	286	174,922	4,627	190,732	31,996	29,288	5,570	69,081	145,242	76.1	45,490	40,720	29,355	26,942	35,342
	2 mos.	286	371,448	10,611	405,422	56,766	57,948	10,739	140,131	285,149	70.3	120,273	107,008	83,071	61,400	95,051
Texas & Pacific	Feb.	1,949	1,656,434	163,620	1,977,232	229,513	349,922	68,792	617,403	1,391,393	70.4	585,839	483,234	372,633	218,004	469,585
	2 mos.	1,949	3,344,233	344,128	4,014,968	486,231	703,113	139,119	1,267,995	2,857,228	71.2	1,157,740	950,754	715,312	462,615	909,381
Texas Mexican	Feb.	162	86,354	868	97,004	17,347	14,754	2,982	28,815	70,498	72.7	26,506	20,790	14,559	15,306	16,372
	2 mos.	162	180,200	1,253	200,979	35,004	28,930	6,520	63,369	147,963	73.6	53,016	43,415	32,073	72,314	35,699
Toledo, Peoria & Western	Feb.	239	182,778	15	185,331	50,301	9,847	15,916	46,967	130,981	70.7	54,350	44,816	31,372	14,338	43,236
	2 mos.	239	342,829	28	347,647	82,799	20,721	32,515	92,631	244,759	70.4	102,888	84,954	55,815	20,616	78,975
Union Pacific System	Feb.	9,825	8,510,951	764,346	10,095,324	1,090,596	2,185,490	280,057	3,950,639	8,221,938	81.4	1,873,386	938,138	513,704	481,781	1,041,843
	2 mos.	9,825	17,072,683	1,787,134	20,531,837	2,029,071	4,435,487	575,975	7,782,369	16,332,387	79.5	4,199,450	2,329,783	1,425,261	1,155,971	2,481,476
Utah	Feb.	111	138,705	.....	139,579	17,738	27,032	551	33,197	82,889	59.4	56,690	41,357	32,973	3,248	42,775
	2 mos.	111	277,238	.....	278,962	33,842	54,236	1,038	65,390	163,268	58.5	115,694	85,398	67,805	25,079	87,445
Virginian	Feb.	619	1,422,293	3,785	1,488,365	93,187	248,380	19,322	263,819	656,676	44.1	831,689	681,689	721,346	614,146	814,512
	2 mos.	619	2,860,332	7,404	2,988,060	190,279	490,097	37,468	520,895	1,308,588	43.8	1,679,472	1,339,472	1,411,503	1,182,385	1,597,820
Wabash	Feb.	2,447	3,267,660	189,529	3,716,016	366,525	630,830	137,621	1,516,268	2,805,337	75.4	912,679	741,117	466,311	396,666	644,842
	2 mos.	2,447	6,256,048	411,459	7,264,865	720,508	1,338,344	278,917	2,900,956	5,550,914	76.4	1,713,951	1,388,214	821,632	583,555	1,178,793
Ann Arbor	Feb.	293	307,343	2,724	316,747	30,853	64,459	11,187	155,428	274,482	86.7	42,265	27,387	15,627	35,884	35,781
	2 mos.	293	608,594	5,811	628,068	55,812	134,538	23,352	297,690	536,540	85.4	91,528	61,226	37,403	55,523	77,721
Western Maryland	Feb.	882	1,319,320	7,199	1,362,257	162,308	285,035	34,970	344,777	873,898	64.2	488,359	403,359	432,494	361,411	527,520
	2 mos.	882	2,660,099	14,432	2,745,986	319,650	599,921	73,273	698,248	1,791,900	65.3	954,086	784,086	835,048	712,931	1,025,095
Western Pacific	Feb.	1,207	779,089	16,764	815,946	134,994	173,285	54,850	385,696	792,207	97.1	23,739	—39,713	—75,490	—146,378	—23,831
	2 mos.	1,207	1,661,274	50,847	1,753,118	262,989	368,840	110,554	804,642	1,634,671	93.2	118,447	—4,324	—108,829	—146,245	—5,548
Wheeling & Lake Erie	Feb.	511	1,019,906	1,959	1,076,546	109,991	323,434	30,586	350,028	844,367	78.4	232,179	144,603	158,474	103,929	259,851
	2 mos.	511	2,098,858	4,138	2,214,144	213,029	652,205	61,267	708,358	1,697,631	76.7	516,513	331,428	360,159	278,004	562,918
Wichita Falls & Southern	Feb.	203	25,157	19	28,506	6,342	5,701	1,838	14,010	30,822	108.12	—2,316	—4,968	—6,431	—997	—4,475
	2 mos.	203	60,237	44	68,855	20,439	11,167	3,217	26,992	68,381	99.31	474	—4,835	—8,080	—2,474	—4,168

MODERNIZE

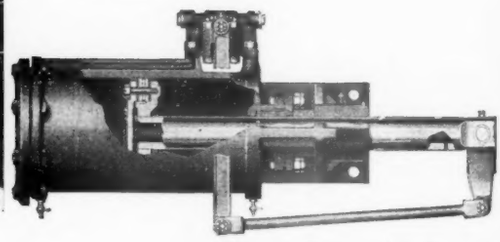


Barco Flexible Joint.

Barco 3-V Engine-Tender Connections.



Barco Low Water Alarm.



Barco Type M Power Reverse Gear.

Barco Steam Heat Connections.

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